

Railway Age

JANUARY 12, 1935
FOUNDED IN 1856

TRANSPORTATION LIBRARY

Railways or Public Works?

A Golden Opportunity

That the Administration has for the moment turned toward long-range social planning does not alter the fact that there exists ready at hand an outstanding opportunity to alleviate with one stroke two important shortcomings in the nation's economy. It is of national importance that this confluence of possibilities be recognized and taken advantage of by the 1935 Congress.

Easily the most immediately urgent problem before the country is the creation of employment by stimulation of the durable goods industries. The railroads are in need of rehabilitation if many of them are not to become public liabilities.

Properly conducted financing, only in small part with Federal Funds, of a comprehensive railroad equipment rehabilitation program would importantly forward the solution of these two problems and at the same time meet the most essential qualifications of any public works program—that the expenditures be self-liquidating and safe and still confer a direct public benefit.

If modern motive power and car design, together with the latest traffic control, signalling and braking devices, replace the large percentage of admittedly obsolete railroad equipment, many railroads can sharply reduce operating expenses. This premise has been validated by practically every study of railroad equipment made during the past few years

and is assented to by a majority of railroad and equipment officials. A new locomotive replacing an obsolete one (and the great majority are obsolete) can pay for itself in three or four years, and light-weight cars and other devices can effect the same sort of economy in less degree.

The practical working out of such a program will need the Federal Co-ordinator's technical surveys, the co-operation of the Association of American Railroads and of individual railroad managements—and probably an act of Congress. But these conditions could be fulfilled within a few weeks.

Despite the partial over-capacity of the equipment trade it is a reasonable assumption that important railroad purchasing would stimulate a modernization program. The steel industry, operating at less than 35 per cent of capacity, already has turned to modernization to meet production problems, and modernization means a flow of private capital into payrolls.

The railroads of the nation perhaps are not a "natural resource" of the type which the Administration seems disposed to protect in its far-flung social scheme, but they are most certainly a national asset. Circumstances allow the conservation of this asset to deal a vigorous blow at unemployment.

These problems are lined up, like partridges on a limb, waiting for the Administration and the railroads to shoot them down and bring home a full bag.

—*an Editorial from the Wall Street Journal*



TEN LOCOMOTIVES FOR CHILE

Baldwin recently shipped, from its Eddystone dock, ten Mikado type locomotives for the Chilean State Railways.

These locomotives formed part of the largest export shipment of railway material to leave the United States since 1929.

Large numbers of Baldwin steam and Baldwin-Westinghouse electric locomotives have been serving the railways of Chile for more than 50 years.

● ● ●

Whether for service in the United States or abroad, new locomotives of modern design will more than pay their way by their increased hauling capacity at speed and economy of operation.

It takes Modern Locomotives to make money these days!

THE BALDWIN LOCOMOTIVE WORKS
PHILADELPHIA

Railway Age

Published every Saturday by the Simmons-Boardman Publishing Company, 1309 Noble Street, Philadelphia, Pa., with editorial and executive offices: 30 Church Street, New York, N. Y., and 105 West Adams Street, Chicago, Ill.

SAMUEL O. DUNN, Chairman of Board
HENRY LEE, President
LUCIUS B. SHERMAN, Vice-Pres.
CECIL R. MILLS, Vice-Pres.
ROY V. WRIGHT, Vice-Pres. and Sec.
FREDERICK H. THOMPSON, Vice-Pres.
GEORGE SLATE, Vice-Pres.
ELMER T. HOWSON, Vice-Pres.
F. C. KOCH, Vice-Pres.
JOHN T. DEMOTT, Treas.

CLEVELAND
Terminal Tower

WASHINGTON
832 National Press Building

SAN FRANCISCO
58 Main St.

Editorial Staff

SAMUEL O. DUNN, Editor
ROY V. WRIGHT, Managing Editor
ELMER T. HOWSON, Western Editor
H. F. LANE, Washington Editor

B. B. ADAMS
C. B. PECK
W. S. LACHER
ALFRED G. OEHLER
F. W. KRAEGER
E. L. WOODWARD
J. G. LYNE
J. H. DUNN
D. A. STEEL
R. A. DOSTER
H. C. WILCOX
NEAL D. HOWARD
CHARLES LAYNG
GEORGE E. BOYD
WALTER J. TAFT
M. H. DICK

The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.).

Subscriptions, including 52 regular weekly issues, payable in advance and postage free; United States and possessions, 1 year \$6.00, 2 years \$10.00; Canada, including duty, 1 year \$8.00, 2 years \$14.00; foreign countries, 1 year \$8.00, 2 years \$14.00.

Single copies, 25 cents each.

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette. Name registered U. S. Patent Office.

Vol. 98

January 12, 1935

No. 2



In This Issue

Norfolk & Western Buys de Luxe Coaches..... Page 36

A description of these new air-conditioned cars in connection with the design of which unusual provisions have been made for comfortable and luxurious travel.

Can We Expect Better Rails?..... 40

J. R. Mooney, assistant manager of the Rail and Fastenings Department, Robert Hunt Company, Chicago, gives an account of recent developments in manufacture that should insure improved service in track.

Expenditures for Railway Supplies Up 160 Million..... 47

A compilation showing purchases for 1934 to be the largest in three years despite severe slump since June.

EDITORIAL

State Socialism and Its Ostellable Opponents..... 33

GENERAL ARTICLES

Norfolk & Western Buys de Luxe Coaches..... 36

Freight Car Loading..... 39

Can We Expect Better Rails? by J. R. Mooney..... 40

President Plans One Agency to Regulate All Transport..... 42

Oral Arguments in Rate Case..... 43

Pacific Coast Objections to Car Pooling, W. B. Kirkland..... 45

Expenditures for Railway Supplies Up 160 Million..... 47

Materials Economics in Light-Weight Railway Cars, by E. J. W. Ragsdale..... 52

NEWS 55

REVENUES AND EXPENSES OF RAILWAYS..... 62

The Railway Age is indexed by the Industrial Arts Index and also by the Engineering Index Service

WHAT MAKES THIS A BETTER PIPE?



IT'S THE OLD STORY OF THE THREE-LEGGED STOOL

Take any one of the legs off a three-legged stool and it won't stand up. Leave out one of the three chief elements in Toncan Iron and you can't possibly get the same performance out of the resulting metal. » » The excellent service records that Toncan Iron Pipe has made in so many severe uses are directly traceable to the metal of which it is made. It is an alloy of carefully-refined open hearth iron, copper and molybdenum, processed under the supervision of men skilled in the making of fine alloys. Years of experience have proved that every one of these elements is necessary—that each alloying metal must be added at the right time and at the right temperature in exactly the right proportions. There is no guess-work—and that's what makes Toncan Iron Pipe better. That's why Toncan Iron ranks first in rust-resistance among the ferrous metals after the stainless steels. » » The interesting story of the development of Toncan Iron Pipe and its many applications is fully told in "Pipe for Permanence." Write for a copy. » » » » » » » »



REPUBLIC STEEL
CORPORATION
GENERAL OFFICES YOUNGSTOWN, OHIO

TONCAN
IRON PIPE

State Socialism and Its Ostellible Opponents

The *Railway Age* is especially interested in the editorial policies of the Chicago Tribune regarding government policies affecting business because the Tribune is the most typical and vehement spokesman of that large class of American business men who oppose application to their own industries of certain New Deal policies the equivalent of which they have got applied, and still want to have applied, to the railroad industry.

The *Railway Age* has tried twice now—in editorials in its issues of September 15 and December 15, 1934,—to get the Tribune to state frankly and specifically what government policies respecting the railways and other carriers it actually favors and its reasons for favoring them. Such a statement would be illuminating. It would show whether, and, if so, why, a great newspaper believes it can promote the public welfare by advocating the application of absolutely antithetical government policies to transportation and other industries; and this would throw light on the reasoning by which so many business men convince themselves that the railways should be able to prosper under policies of a kind that they loudly and solemnly asseverate would ruin their own industries. But unhappily the *Railway Age* has not as yet been able to get the Tribune to state clearly and unequivocally just what transportation policies it favors when it "roars so loud and thunders in the index." We flatter ourselves that we know the reasons for this but, because of that very circumstance, we are not optimistic enough to believe that we will ever be able to get the Tribune to take its readers into its confidence regarding the matter.

No Subsidies—Excepting for Ourselves

In its issue of December 10 the Tribune published an editorial purporting to be a reply to the *Railway Age's* editorial of September 15. In an editorial in our issue of December 15 we showed that the Tribune had dodged the most important issues involved, and that therefore its purported reply was hardly any reply

at all. We asserted that its failure to answer our question, "Does the Tribune favor government subsidization of other carriers to provide competition with the railways?" meant that it did favor such subsidization. We asserted that both the changes in government regulation of transportation that it advocated and those that it opposed plainly meant that it favored "a continuance of regulation which would leave the railways tied hand and foot while being attacked upon every side by competitors that it contends should be left free to use every competitive weapon denied to the railways." The Tribune has since published various articles and editorials concerning transportation, in none of which has it repudiated the interpretation placed by us upon its policies, but in which it has repeatedly said things indicating that that interpretation was correct.

On December 22 the Tribune published an editorial defending its continued advocacy of large expenditures by the taxpayers of the United States upon the Mississippi waterway. It contended that the government's construction of the Panama canal plus the government's refusal since 1920 to let the railways fix rates to meet ocean competition have made it impossible for Chicago to compete on the Pacific coast with Atlantic seaboard cities. "The obvious cure," it said, "is for the western railways to establish rates from Chicago that will enable it to market its goods on the Pacific coast in competition with the eastern seaboard. * * * What else have we to turn to except waterway competition?" Instead of constantly stigmatizing railway managements for inertness and incompetency, why not mention the fact that the railways right now are carrying on a campaign for legislation to make practicable the "obvious cure" and help them to carry it on? Instead, in its "Platform for Middle West," which the Tribune runs at the head of its editorial columns, it includes "Save the Mississippi Waterway," but makes no reference whatever to the change in the Fourth Section of the Interstate Commerce Act that is neces-

sary to make possible what it declares is the "obvious cure."

Advocating "Pork Barrels"—While Denouncing Them

The Tribune's defense of its advocacy of additional large expenditures upon the Mississippi waterway is a perfect example of the way in which "pork barrel" expenditures are promoted by many of those who indulge in the most resounding generalities against them. The government having made huge expenditures upon the Panama canal—of which the Tribune was among the earliest and strongest advocates—and this and the government's policy of regulating railway rates to the Pacific coast having placed Chicago at a disadvantage, the Tribune now, while inveighing against other large expenditures of the taxpayers' money, advocates large expenditures especially to benefit Chicago. Most members of Congress will not heed the Tribune's diatribes against large expenditures upon unneeded public works in general, but they will gladly and greedily heed its selfish argument for large expenditures upon the Mississippi waterway. All such arguments for specific large expenditures are "right down their alley." They are the very stuff that "pork barrels" are made of. There is not a section, community, industry or class in the United States in behalf of whose supposed rights and interests a similar argument cannot be made—hardly one, in fact, in behalf of which some similar argument is not being made right now. Hence the virtually unanimous support in the last Congress, regardless of party, of every proposal for spending. Hence all the vast "pork barrel" appropriations now in contemplation by the Congress of spenders just assembled.

"Help Chicago"—By Railway Borrowing of "Easy Money"

In its issue of January 3 the Tribune published one of a series of articles the text of which is, "Make Chicago the first city in the world." In this article it advocated the expenditure by the railways of many millions of dollars to erect "a consolidated passenger station" on the Chicago lake front, and said, "If an agreement is reached, request may be made for loans from the Public Works Administration." This from a newspaper that almost daily impugns the intelligence of railway management and denounces the "easy money" policies of the Roosevelt administration! The railways involved need to make vast expenditures in the interest of themselves and of the many communities in the far-flung territories that they serve, but there is not any expenditure that there would be less economic justification for making under present conditions than for a "consolidated passenger station" on the lake front of Chicago. Railway directors and executives who would agree to try to borrow for such an expenditure now should be taken, not to the Public Works Administration, but to an alienist. Even if the real needs of the railways were much less dire and

their financial conditions much better, why should they spend a large amount of money especially to help make Chicago, rather than some other city, "the first city in the world?" Largely owing to the Tribune's propaganda, Chicago is the most anti-railway city in the United States. As long as its business interests continue to favor government transportation policies that help airways, buses, trucks and waterways to destroy the earning capacity of the railways, obviously they should call, not upon the railways, but upon the railways' subsidized and unregulated competitors, to help "Make Chicago the first city in the world."

"Expert" Transportation Views—from Automotive Propaganda

In an editorial in its issue of January 3 the Tribune impugned Chairman Lee of the Interstate Commerce Commission as a transportation expert because he had made an address advocating regulation of highway and waterway carriers. The Tribune, or somebody connected with it, ought to go and get a reputation outside its own office as a transportation expert before it challenges the expertise of the chairman of the Interstate Commerce Commission or any other recognized student of the subject. In its issue of January 4 the Tribune published an editorial entitled, "The Stimulus of Competition," which indicated very plainly the source from which it imbibes some of the "expert" and impartial views regarding transportation which it pontificates. It alleged a "traditional tendency" of the railroads to "halt on each step of progress until every last segment has reached that level." It is significant that the Tribune should have been the first railroad historian outside the automotive industry to have mentioned this "traditional tendency" of the railroads. Continuing, it asserted that it took the railways "twenty years to recognize motor competition, but now that they fully realize that there is a dangerous rival in the field with unlimited possibilities they are responding with air conditioned trains, streamline units, and lowered fares. But they must not stop to standardize, because the virile automotive industry is not going to surrender one inch of advantage without a stiff battle." This serves the dual purpose of implying great initiative and efficiency in the automotive industry and great lack of them in the railroad industry. It will greatly please the automotive industry, because it repeats almost verbatim propaganda disseminated by that industry both to glorify itself and to blackguard the railways for the purpose of preventing federal and state legislation that would establish equality of opportunity in transportation competition.

Why Fair Transportation Competition Is Opposed

Obviously if the automotive industry has been and is so much more efficient than the railway industry, it could compete successfully with the railways on equal terms as regards government subsidies and regulation. Why, then, does not the Tribune answer the

Railway Age's question as to whether it favors government subsidization of other carriers? And why does it refrain from advocating abolition of railway regulation or other changes in government policies that would give the railways and other carriers equal competitive opportunities? The reasons seem obvious. To declare against subsidies in transportation would antagonize the business interests of Chicago and the Mississippi Valley that want big additional government expenditures made upon waterways to enable them to ship more freight largely at the expense of the taxpayers. It would also antagonize the automotive interests because to require buses and trucks to pay reasonable rentals for their use of public property would drive a large part of them from the highways. To advocate actual equalizing of regulation in any way would likewise antagonize both these interests. They do not avow that they want to ruin the railways. They simply want government policies advantageous to themselves that they have not sense enough to know will, if persisted in, ruin the railways, cause government ownership and greatly advance state socialism. Their attacks upon the initiative and efficiency of railway management are a smoke screen to mislead the public regarding the real issues. Their claims that they favor a substantial reduction or abolition of railway regulation prove entirely hypocritical when put to the test.

Illustrating Hypocrisy as a National Vice

Hypocrisy often has been said to be the great American vice. The charge was never supported by any better evidence than that afforded by business interests and their spokesmen that now vociferate against certain parts of the New Deal and at the same time oppose any substantial changes in precisely similar Old Deal policies regarding transportation.

We have cited and commented at such length upon the glaring and grotesque inconsistencies in the editorial policies of a single newspaper because they so well and strikingly illustrate the glaring and grotesque disparities between the government policies ostensibly and actually advocated by a large part of the business men of this country. Beset on one side by the clamor of "liberals" who favored unlimited government competition and spending, and on the other side by the clamor of professed proponents of government budget balancing and private enterprise who advocate every kind of government spending, competition or regulation that they selfishly and fatuously hope will be used to benefit only them, apparently only God and the sober sense of the middle class can save the United States from insolvency and state socialism.

The *Railway Age* began opposing certain New Deal policies when most of those now squawking against them were supporting them for their own special benefit, or refraining from criticising them because of their temporary popularity even with business men. There is one thing, however, that can be said for the socialists, radicals and New Dealers. Most of them are advocating the policies they are because they believe sincerely, however mistakenly, that they are in the public interest, while most of those who oppose the New Deal in business and at the same time defend and advocate continuance of the Old Deal in transportation are doing so because they do not care a hoot for any public or private interest except their own. At a time when not only big business, but the entire system of private enterprise, are under attack the numerous current exhibitions of callous inconsistency and selfishness by leaders and spokesmen of large communities and industries help to make the system of private enterprise exceedingly difficult to defend.

A Noted British Economist on Public Works vs. Private Investment

There has been some increase of activity and reduction of unemployment. But the movement seems to halt, and it has been largely based upon a great public expenditure financed by loans. The stimulant of the currency depreciation, followed by devaluation, seems to have exhausted its effects. In two spheres of policy and development the issue appears especially critical and important. The first is that of private investment. The flow of capital into ordinary business enterprise still seems to be arrested.

This is not for want of available capital. Apparently, it is not in the main, though it may be partly, due to the new legislation and its effect in frightening the issuing houses. It seems to be chiefly due to want of confidence in the prospects of future

profits. As the public program expands the issue becomes an especially crucial one.

For while public expenditure is a useful supplement and even a stimulant for private investment during a period of temporary recession, there comes a time when, if private investment does not revive, the public expenditure becomes not a stimulus to it but a new obstacle. If that point is passed, the whole economy of the country becomes increasingly dependent upon an expansion of public expenditure. It is then increasingly difficult either to call a halt without causing a new depression, or without doing so to secure any renewal of private investment. It is impossible to judge from outside just when this critical point may be reached, but it does not seem very distant.

From an Article, "Recovery: The Present Stage," by Sir Arthur Salter in the current issue of the *Yale Review*.



Norfolk & Western de Luxe Passenger Coach

Norfolk & Western Buys de Luxe Coaches

Air-conditioned cars for through service are fitted with luxurious women's rest rooms and men's smoking rooms—Seats are widely spaced

THE first of 18 new passenger-train cars, in which unusual provision for comfortable and luxurious travel have been provided, was delivered to the Norfolk & Western by the Bethlehem Steel Company at its Harlan plant, Wilmington, Del., on December 11. Two types of cars are included in the order. Ten are passenger coaches and eight, combination passenger-baggage cars. All are equipped with complete air-conditioning service and with unusually complete facilities for

the comfort and convenience of passengers. The interior design was developed by the railroad.

In general, the cars are of straightforward construction. Both types are 84 ft. 2 $\frac{3}{4}$ in. long over the buffers and the full coach is 74 ft. 3 $\frac{1}{4}$ in. inside. They are 9 ft. 11 $\frac{3}{4}$ in. wide over the side sheets and 9 ft. 2 $\frac{1}{2}$ in. wide inside. Their principal departure from conventional construction is in the roof which is of the turtle-back type of relatively flat shape. The overall height of the car is 13 ft. 9 $\frac{1}{16}$ in.—about a foot lower than conventional main-line cars. The coaches weigh 129,000 lb. and the combination cars, when completed, will weigh somewhat less.

Facilities of Unusual Character Provided

The unusual character of the facilities provided in these coaches is indicated on the floor plan. The inclusion of a women's rest room at one end of the car and a smoking room at the other cut down the length of the main compartment of the cars to 46 ft. 5 in. Within this space are arranged 11 double seats on each side to provide seats for 44 persons. These seats are of the rotating, reclining-back, bucket type, with separate control of the back adjustment for each of the two occupants. These seats are spaced 47 in. apart so that the occupants of two facing seats are not annoyed by mutual interference. The seats are upholstered in a special figured plush, in the background of which is a soft green conforming to the general interior color scheme.

The walls of the passenger compartment are finished in two soft tones of green and the ceilings are finished in cream. The floors are covered with rubber tiles of a variegated design and tone to harmonize with the walls and upholstery.

The silk facing of the Pantasote curtains also harmonizes with the other features of the interior finish and the curtain fixtures are chromium plated with a



Interior of the Men's Smoking Room

satin finish which matches the natural satin finish of the aluminum parcels racks.

The ladies' rest room is furnished with a lounge, two comfortable chairs and a vanity chair. The upholstery is in figured Moquette of the same general tone as the upholstery in the main passenger compartment. The men's smoking room at the opposite end of the car is furnished with a sofa and four chairs. These are upholstered in genuine leather of a soft dark shade of green.

A cabinet type water cooler and paper-cup dispensers are placed in the corridor opposite the car door at each end of the car.

Lighting and Air Distribution

As is clearly shown in the illustrations, the ceiling of the car is made in three parts, the center being separated from the two sides by chromium-plated, curved reflector channels within which the ceiling lights are concealed. In each of the two chromium-plated reflector channels in the passenger compartment are forty 25-watt lights. These are supplemented by l'Image lighting fixtures placed below the baggage racks and over each alternate window post. Each of these fixtures contains a 40-watt light with long filament so that the illumination is uniformly distributed through the translucent glass of the fixture. The result is a light distribution remarkably free from shadows, with an intensity of about eight foot-candles at reading height.

The air-conditioning units are mounted over the ceiling in the corridor at the smoking-room end of the coaches. The air from the units is blown into a conduit occupying a space about 3 ft. wide by approximately 8 in. deep over the center portion of the ceiling and between the ceiling-light channels. The distribution is controlled by restricted slots at the sides of the duct where the air leaves to enter the moldings under the two lighting channels. This restriction causes the air to flow out through the step openings on the inner side of each molding in soft streams which mingle with the air in the car without detectable drafts.

Refrigerating equipment of three types has been applied on the cars in the order. Four of the coaches are equipped with Safety-Carrier steam-ejector equipment



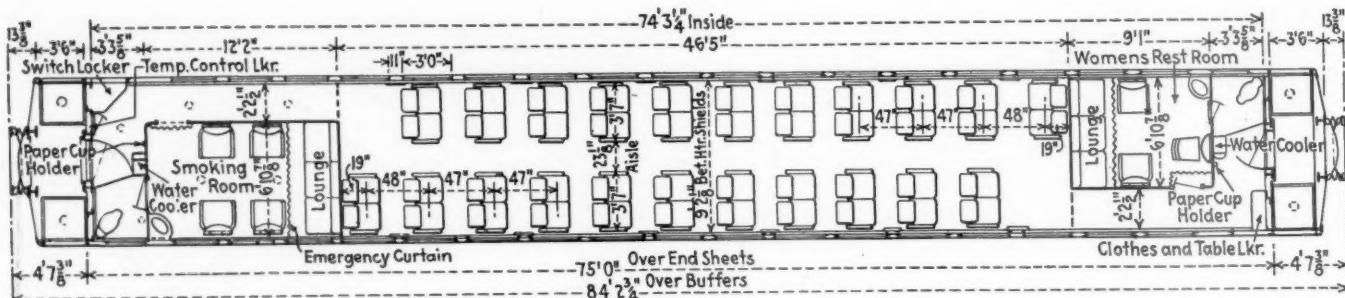
The Women's Rest Room

and the other six with the Frigidaire mechanical-compression system. The eight combination passenger-baggage cars are provided with Westinghouse-Sturtevant equipment. The coach systems are designed to furnish 2,000 cu. ft. of free air per min., 500 cu. ft. per min. of which is fresh air. In the passenger-baggage cars 1,000 cu. ft. of air is provided for the passenger space. In this case, because of the relatively large space in which smoking is permitted, more than 25 per cent of the circulation is fresh air.

The heating coils in the air-conditioning unit are designed to provide the full heating effect for outside



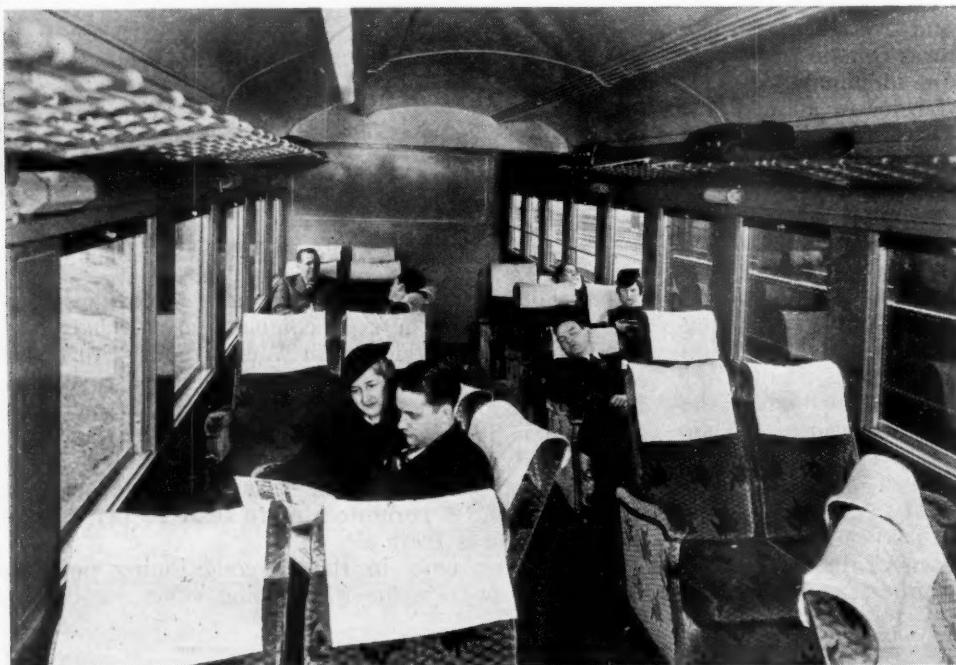
The Widely Spaced Rotating Seats Have Individually Controlled Reclining Backs



Floor Plan of the Norfolk & Western Passenger Coaches

temperature as low as 50 deg. Additional heat is provided through fin-tube radiation along the side walls. The inside finish below the windows is sloped out slightly toward the floor to provide room for the radiators and is perforated to permit circulation of the air over the radiators and into the car. This compact arrangement of sidewall radiation has been made possible

gage cars is arranged with a baggage compartment 37 ft. 2 $\frac{3}{4}$ in. long at the front end. Across the entire width of the car behind the baggage room is a smoking room, 8 ft. 1 $\frac{1}{2}$ in. long, with chairs to seat six persons. Next to the baggage room is the men's toilet on one side of the car and a washstand in an open alcove on the other. Behind the smoking room is the main pas-



The Ceiling Lighting Is Indirect—
Air Is Distributed Through Molded
Grilles Below the Lighting
Channels

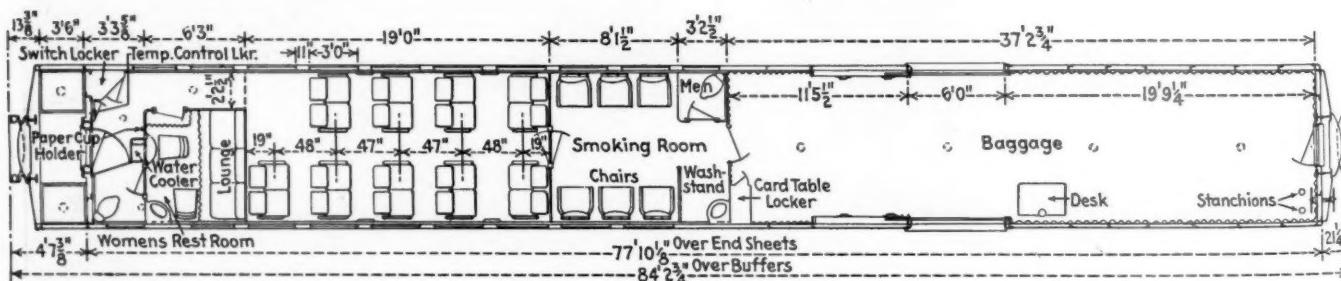
by omitting the fins where the tubes pass the body frame members.

The women's rest room and the smoking room are each fitted with a lavatory with both hot and cold water. Flushing toilets are also provided. Paper-towel containers are placed on the toilet side of the rest-room and smoking-room partitions, and the towels are dispensed through slots in the partitions.

The interior of the combination passenger and bag-

senger compartment with seats for 18 persons. A small rest room for women, with side corridor communication between the main passenger compartment and the vestibule, is placed at the end of the car. All interior decorations, upholstery, toilet accessories, etc., including methods of lighting and air distribution, for the passenger facilities in these cars are duplicates of the similar equipment in the coaches.

An unusual feature in these cars is the use of 110-



Floor Plan of the Norfolk & Western Combination Passenger-Baggage Cars

volt electric current for lighting and air conditioning. Last summer, with the introduction of air-conditioning service on the N. & W., the 32-volt power supply was abandoned in favor of the 110-volt system on the cars fitted with air-conditioning facilities. For operation of these facilities the N. & W. considered the requisite battery capacity to be at least 30 usable kilowatt hours. Continuing the 32-volt system would have required the rebuilding of practically all of the yard charging facilities on the railroad. It would have required increasing the size of copper in the car circuits and about three and one-half times as much ampere-hour battery capacity would have had to be provided.

The coaches are, therefore, equipped with 110-volt electric systems which permit the use of the present charging lines, and car wiring and which make available for use in the cars 110-volt lamps, motors and other

Special Equipment on the N. & W. Coaches and Passenger-Baggage Cars

Truck frame.....	General Steel Castings Corp.
Truck brake.....	American Steel Foundries, Clasp
Rubber inserts.....	Waugh Equipment Co., Waughmats
Vestibule trap doors.....	O. M. Edwards Co.
Diaphragms.....	Morton Mfg. Co.
Air-brake equipment.....	Westinghouse Air Brake Co.
Fin tube radiators.....	Vapor Car Heating Co.
Ceilings.....	Masonite Corp.
Body insulation.....	Johns-Manville Corp., Salamander
Floor support.....	Morton Mfg. Co., Chanarch
Car floor.....	Tuco Products Corp., Tucolith
Floor covering.....	Goodyear Rubber Co., Rubber tile
Window fixtures.....	National Lock Washer Co.
Curtains.....	Pantasee Company, Inc.
Seats.....	Heywood-Wakefield Co.
Chairs, ladies' lounge and smoking room.....	Strawbridge & Clothier
Seat upholstering.....	L. C. Chase
Flush toilets.....	Dayton Mfg. Co.
Lavatories.....	Standard Sanitary Mfg. Co.
Soap dispensers.....	West Disinfecting Co.
Water coolers.....	Henry Giessel Co.
Hardware, baggage racks, tail gates.....	Adams & Westlake Co.
Lighting equipment, includ. side fixtures.....	Safety Car Heating & Lighting Co.
Storage batteries.....	Edison Storage Battery Co.
4 coaches — 88-cells, A-4h	
6 coaches — 88-cells, A-8h	
8 pass.-bagg. cars — 88-cells, A-6h	
Generator drive.....	Dayton-Roderwald—14 cars
Generators, electric.....	Safety Car Heating & Lighting Co.
4 — 10 kw.	
14 — 15 kw.	
Air-conditioning equipment.....	4 coaches — Safety-Carrier, steam ejector
	6 coaches — Frigidaire, mech. compression
	8 pass.-bagg. cars — Westinghouse-Sturtevant.

appliances which are readily obtainable. The weight and size of the large-capacity generators are also kept down and the standard car-lighting cells, with the number increased in proportion to the increase in voltage, can be continued in use since there is little or no change in the ampere-hour battery capacity required.

With the exception of the four coaches equipped with the Safety-Carrier air-conditioning system, both types of cars are equipped with Safety 15-kw., 120-volt generators, with the Dayton-Roderwald drive. The four cars with steam-ejector type air-conditioning are fitted with Safety 10-kw., 120-volt belt-driven generators. The type and capacity of the batteries are shown in the table of special equipment.

The cars are fitted with Commonwealth four-wheel trucks with 5½-in. by 10-in. journals. Waughmat rubber inserts have been included to reduce the effect of road vibration and noise in the interior of the cars.

Freight Car Loading

WASHINGTON, D. C.

TOTAL revenue freight car loading for the year ended December 29, 1934, was 30,785,594 cars, an increase of 1,565,542 cars, or 5.4 per cent, as compared with the total for 1933 and of 2,605,642 cars as compared with 1932. Total loading by commodities in 1934 as compared with 1933 was as follows:

	1934	1933	Per Cent Increase
Grain and Grain Products.....	1,641,732	1,660,416	1.1 % dec.
Live Stock	1,074,005	886,819	21.1
Coal	6,084,406	5,694,644	6.8
Coke	334,751	298,257	12.2
Forest Products	1,147,096	1,100,817	4.2
Ore	794,663	743,206	6.9
Merchandise, L. C. L.	8,244,182	8,445,635	2.4 % dec.
Miscellaneous	11,464,759	10,390,258	10.3
Total	30,785,594	29,220,052	5.4

For the week ended December 29 the total was 425,120, a decrease of 29,545 cars as compared with the corresponding week of last year but an increase of 19,819 cars as compared with 1932. Decreases as compared with last year were reported as to all commodity classifications except ore, which showed a slight increase. The summary, as compiled by the Car Service Division of the Association of American Railroads, follows:

Revenue Freight Car Loadings

Week Ended Saturday, December 29, 1934

	1934	1933	1932
Eastern	102,117	105,766	95,626
Allegheny	82,454	91,187	79,692
Pocahontas	29,535	30,908	29,645
Southern	60,948	67,203	60,200
Northwestern	48,527	51,718	44,198
Central Western	66,207	70,340	60,088
Southwestern	35,332	37,643	36,032
Total Western Districts	150,066	159,701	140,318
Total All Roads	425,120	454,765	405,301
Commodities			
Grain and Grain Products.....	17,946	20,403	21,982
Live Stock	11,358	11,705	13,375
Coal	107,478	116,185	98,985
Coke	5,993	7,142	4,311
Forest Products	11,782	11,807	9,445
Ore	2,196	2,107	1,433
Merchandise L.C.L.	119,963	124,708	127,028
Miscellaneous	148,404	160,708	128,742
December 29	425,120	454,765	405,301
December 22	547,895	531,464	494,510
December 15	579,935	559,419	515,769
December 8	551,011	541,992	520,607
December 1	488,118	499,596	547,095
Cumulative Total, 52 Weeks.....	30,785,594	29,220,052	28,179,952

The freight car surplus for the first two weeks in December averaged 397,663 cars, an increase of 16,308 cars as compared with the number in the last part of November. The total included 226,940 box cars, 122,533 coal cars, 23,735 stock cars, and 9,609 refrigerator cars.

Car Loading in Canada

Car loadings in Canada for the week ended December 29 totaled 29,334 cars, as against 29,360 cars for the last week of 1933 and 41,114 cars for the previous week, according to the compilation of the Dominion Bureau of Statistics.

Total for Canada:	Total Cars Loaded	Total Cars Rec'd from Connections
December 29, 1934.....	29,334	17,142
December 22, 1934.....	41,114	21,352
December 15, 1934.....	43,367	21,644
December 30, 1933.....	29,360	14,231
Cumulative totals for Canada:		
December 29, 1934.....	2,319,936	1,101,542
December 30, 1933.....	2,031,970	954,905
December 31, 1932.....	2,175,625	972,961



These Rails Had to Be Removed from Track Because of Damage to the Ends, Although They Had Suffered Little Wear Throughout 90 Per Cent of Their Length

Can We Expect Better Rails?*

An account of recent developments in manufacture that should insure improved service in track

By J. R. Mooney,

Assistant Manager, Rail and Fastenings Dept., Robert Hunt Company, Chicago

THE history of railroading in this country has been one of gradually increasing loads and gradually increasing weight of rail. As the size of the rail has been increased, the carbon content has also been increased until, with the adoption of the A. R. E. A. rail specification of 1925, we were getting rails with 0.89 carbon. Many have felt that this carbon content is too high and this was recognized in the 1933 specification by a lower carbon content for the heaviest rails.

The increase in loads that has been going on for many years may possibly be halted now, but the increase in speeds is becoming accelerated and the pressure for longer life at less cost has been increased, due partly to the enforced economy of the times and partly to natural progress.

Development in all classes of steel products has been much the same. First, the carbon content which gives the best results is arrived at by experience. When this has been done and further improvement of the product is demanded, heat-treatment or alloys, or sometimes both, are resorted to. We have already obtained the maximum benefit from carbon in our rails and we must now turn to heat-treatment or the alloys.

The Ends Need Attention

When we consider the behavior of a rail in track, it is apparent that the ends are most in need of a superior metal. In tangent track the ends of a rail batter down and are welded up sometimes many times before the middle portion of the rail is worn out. It is this necessity for improving one particular part of the rail that has resulted in the use of heat-treatment rather than alloys. Alloys necessarily affect the rail from end to end and all parts of the section, while heat-treatment can be applied locally where it is needed.

The process of hardening steel by heat-treatment is simple. Heat it to a red heat, quench it and it is hard. If it gets too hard, you can either quench it at a slower rate or you can temper or draw the hardness by a

second heating after the quenching. These two operations, quenching and drawing, are the basis of all heat-treatment for hardening not only rails but all kinds of steel.

Hardening Rail Ends in Track

Some of the railroads have been hardening the ends of their rails in track by using either a flame or an electric arc for heating the steel, and generally water or oil for quenching it. Sometimes the quenching is adjusted so that the desired hardness is obtained without further treatment and sometimes the hardened ends are drawn or tempered by a second heating to a lower temperature. The results obtained from rails with the ends hardened in track have proved that this is a very good way to lengthen their life at a cost that is well below the savings made, so there is a very considerable net gain.

This hardening should be done before there is any batter, but experience so far indicates that this cannot be done. Initial batter occurs very quickly, and on heavy-traffic lines it develops before the heat treating gangs get to the rail. One can appreciate the difficulty of following up simultaneous rail laying at several different points. This naturally led to the idea of hardening the ends before the rails go into track, and some of the rail mills are now prepared to do end hardening on a portion of their rail production.

Harden Rail Ends at the Mill

The methods of hardening used in the mill differ somewhat from those used in track, although the fundamental principles of quenching and drawing are the same. When the rolling of a rail has been completed, it is put on a bed to cool. When it comes to this bed, the temperature is high enough so that quenching of the ends will harden them, and the heat from the unquenched portion of the rail will re-heat the quenched part and temper it. The quenching is done by fitting a shoe over the end of the rail and directing a stream of water, or water and air, or sometimes just air, against the top of the head of the rail. It takes but

* Abstract of a paper read before the Maintenance of Way Club of Chicago.

a few minutes for this quenching, the exact time depending upon the medium used for quenching and on the hardness desired. This method of using the natural heat of the rails requires that the quenching be done before the rails have cooled. To treat in this way all the rails rolled will require extensive equipment and quick work, but I believe that the rail manufacturers can solve the problem satisfactorily.

In another way of hardening rail ends in the mill, the process is not applied until the rails have cooled. They are then put into a machine in which the heads of the rails are subjected at the end to electrical resistance heating. After heating, they are taken out of the machine and quenched with a suitable medium. This process has some advantages over that first described in that the heat-treating can be done at any time and rails that have to be cut back to shorter lengths at the cold saw can be delivered with hardened ends just the same as full-length rails. This is, of course, impossible when the rails are hardened on the hot beds.

Good Results from Both

The distribution of hardness produced by the two methods is somewhat different because ends hardened on the hot bed are first hardened and then drawn, while the hardness of the ends treated by electric heating is controlled at present by the rate of quenching, and there is no subsequent re-heating. So far as we know now, both methods will give good results in service.

The merits of hardening rail ends in track appear to have been demonstrated, and I believe it has also been shown that the job can be done satisfactorily in the mill. The cost of doing the work in the mill should be less than in the field and I think that the installation of sufficient equipment to handle the entire output in our mills is only awaiting a demand from the railroads.

There may come a time when the rail ends will last so long that they will out-wear the middle portions of ordinary rail. When this time comes, we will have to look about for ways of increasing the life of the entire rail. We can resort to heat-treatment and three rail manufacturers have already experimented with processes for hardening the entire rail section from end to end. Some experiments have also been made with alloy steels. These are both possibilities, and I believe that when the need arises, we will be able to produce rails that are much harder and tougher throughout than those now produced, but considering the life we are now obtaining from our rail ends, there seems to be no justification yet in trying to improve the wearing qualities of the middle of the rail for tangent-track service. For certain curves and other heavy-duty purposes rails hardened throughout, and alloy rails can be used to advantage, and I understand some of the mills will furnish them now.

The Quest for Better Steel

When I first mentioned heat-treatment, I may have given the impression that heat-treatment implies the hardening of steel. This is not true, as you will readily perceive when you consider that annealing is a form of heat-treatment that is designed to soften steel. I make this explanation here because in recent years, rails have been heat-treated with an object other than hardening them. I refer to the various processes for eliminating shatter cracks in rails.

For some time, many of us suspected that the nucleus of a transverse fissure was a shatter crack and we have known for some time that there are shatter cracks in some rails when they leave the mill. In view of this, it was only natural that attempts should be made to

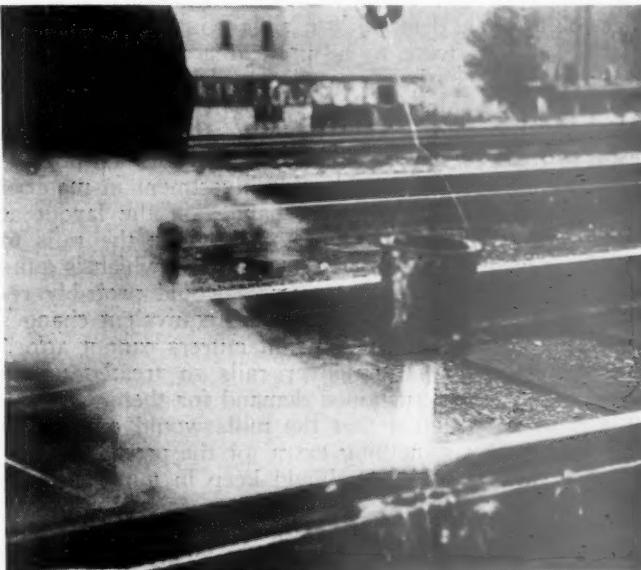
eliminate shatter cracks at the mill. In the summer of 1931, I. C. Mackie, engineer of tests at the Dominion mill in Nova Scotia, found that he could eliminate shatter cracks in rails by subjecting them to a prolonged cooling process. His plan is to take the rails from the hot bed while they are at a temperature of about 650 deg. F., pack them into a completely enclosed steel box that holds about 100 tons of rails, and allow them to cool to about 100 deg. above the atmospheric temperature. This takes some 24 hours. He found that rails treated in this way do not contain shatter cracks, while rails from the same heat and even from the same ingots, cooled in the ordinary way on the hot beds, sometimes do contain shatter cracks. Mr. Mackie's process is, as far as I know, the first successful method of eliminating shatter cracks. I say "successful" because we haven't heard of any shatter cracks being found in rails so treated, and officers of the Canadian Pacific and the Canadian National think so much of the process that they specify that all of the rails they purchase from Canadian mills shall be so treated.

Do not get the impression that the Mackie process is annealing. It is not. The slow-cooling starts at temperatures too low to result in annealing. The only effect on the rails other than the elimination of shatter cracks, so far as we have been able to determine, is a very slight softening, amounting to just a few points Brinell and a slight increase in the toughness of the steel, as evidenced by the number of blows required to break the drop-test pieces.

About 4,000 tons of rails treated this way have been in tracks of the Canadian Pacific since the fall of 1931 —about three years. Large quantities have been in service for shorter periods. It will not be long before we will have service results which will throw considerable light on the relation between shatter cracks and transverse fissures, and the value of the Mackie process.

Other Processes

We have had experience in this country with other processes designed to accomplish the same result. One of these is the Sandberg process as applied at the Lackawanna plant of the Bethlehem Steel Company. This is not the familiar Sandberg Sorbitic process for hardening the running surface of the rail. In the process for eliminating shatter cracks, the rails are pulled up



One Method of Quenching Employed in Heat-Treating Rail Ends in Track

on a special hot bed, over which is built a sort of gas-heated furnace. The rails go into this furnace at a temperature of about 1,000 deg. F., stay in there about one hour and a half and come out at a temperature of about 450 deg. F. A somewhat similar process has been tried at the Steelton plant.

Another process is the normalizing process used at Gary. Here, the rails go onto the hot beds where they are allowed to cool until they have passed through the critical range, which means that they have cooled to about 1,000 deg. F. Then they are put into a furnace where they are heated to 1,500 deg. F., and after they have become thoroughly heated to this temperature, they are replaced on the hot beds and allowed to cool in the normal way. At the plant of the Inland Steel Company, a process similar to the Mackie process is used.

We have had little experience with rails treated by these other processes. The real test is service, and although a number of railroads have small trial lots of these rails in track, it may be several years before we can get any definite information, particularly if no fissures develop. Then it will be necessary to experiment with larger quantities because the small lots now



Longitudinal Section Through the Head of Rail that Has Been Heat-Treated at the End, the Figures Indicate Rockwell Hardness

in service might have given good service without any heat treatment. In this respect, the Mackie process is far ahead of the others and we must be careful not to judge one process by results from any of the others.

What Is Involved

Of course, the railroads are vitally interested in transverse fissures, and if it appears that any of these processes eliminates shatter cracks and by so doing, eliminates or even reduces the number of transverse fissures, there will be a demand for rails so treated. If the Mackie process were to be used at a mill turning out a thousand tons of rails a day, which is perhaps the average production of our American mills when they roll rails, it would require ten boxes, holding 100 tons each, to treat the entire output of the mill. To provide these would entail a considerable investment in material and would require extensive changes in the layout at the finishing end of the mill to distribute the rails to all of the boxes at the proper temperature, which is quite important. As the other processes would probably require about as much equipment and equivalent changes in the mill layout, the rail manufacturers cannot afford to equip their mills to deliver rails so treated unless there is a real and sustained demand for them.

It is to be assumed that the mills would expect the railroads to pay something extra for the process. Considering this, I think we should keep in mind that we should expect the rail manufacturers to apply to the manufacture of rail steel the knowledge of steel which has been acquired in recent years. The demand for higher quality steels, both carbon and alloy, which has been made by other industries, has been met so successfully by the manufacturers that in many instances

what was up-to-date five years ago is entirely out of date today. We now know that there are vast differences between heats of identical chemical composition, and considerable is known concerning methods of detecting these intangible qualities and controlling them. This knowledge is being extended rapidly, and I think we should expect it to be applied to the making of rail steel. This may result in a year or two, in rails being turned out substantially free from shatter cracks, and this without any slow cooling process.

Some of the slow cooling processes may prove effective in reducing transverse fissures, but we won't know this for some time, particularly in the case of those that have not been extensively used. In the meantime, we should not neglect other possibilities.

President Plans One Agency To Regulate All Transport

WASHINGTON, D. C.

LONG-POSTPONED transportation legislation, to some extent at least along the lines of that which has been advocated by the railroads for several years and which has been under study by Co-ordinator Eastman and other representatives of the government, was specifically made a part of the Administration program for the Seventy-Fourth Congress by the President's address before a joint session of the Senate and the House on January 4. Only part of one sentence was devoted to it, because the President expects to send up a special message on the subject later, probably after Co-ordinator Eastman's forthcoming report, together with the Interstate Commerce Commission's comments on it, has been made public, but it was given first place among the "other measures of national importance" which were outlined after the discussion of the \$4,000,000,000 public works program which was the main topic of the address.

"Among the subjects that lie immediately before us," the President said, "are the consolidation of federal regulatory administration over all forms of transportation," and several others that also are to be covered in separate messages. The President also mentioned the elimination of grade crossings as part of the public works program by which he proposed to give employment at something less than standard wages to the three and one-half million employable people now on relief, although no indication was given as to the amount which it is proposed to expend for this purpose. Careful studies have been made as to the amounts which might profitably be used in this way but a detailed itemization of the entire public works program still awaits a good deal of further study and planning.

Consolidation of Regulatory Functions

"Consolidation" of federal regulatory functions in relation to all forms of transportation implies first the extension of federal regulation to certain forms of carriers to which very little of it has thus far been applied, such as the highway motor vehicles operating in interstate commerce and the carriers operating on inland waterways and in coastwise and intercoastal service, but it is likely that the passage through Congress of a comprehensive administration bill for such a plan would be somewhat smoother than that of separate bills pertaining

(Continued on page 51)

Oral Arguments in Rate Case

Railroads ask that patrons share portion of increased operating expenses

ORAL arguments on the petition of the railroads for authority to make increases in freight rates averaging about 6.7 per cent, which they estimate would add approximately \$170,000,000 to their revenues, and which they declare is necessary to enable the railroads to survive in the face of an era of mounting costs, were begun before the Interstate Commerce Commission on January 9 and were expected to consume a week. Most of the Commissioners had not heard the testimony, amounting to 6,515 pages of transcript, with 474 exhibits, as most of the hearings were held before Commissioner Aitchison and examiners, although Commissioners Tate and Mahaffie conducted some of the hearings outside of Washington.

The first day was devoted to the argument of counsel for the railroads, who emphasized that they were asking the shippers to share only a part of the estimated increase of \$290,000,000 a year in their operating expenses, resulting from higher wages and prices they must pay, and who asserted that denial of the petition would be especially disastrous to the credit of the railroads because it would amount to a declaration that they are prohibited by law from applying to their business the same economic law under which manufacturers and other businesses are allowed to increase prices as costs of production are increased. On the basis of returns for 11 months it was estimated that the railroads would have a net deficit after fixed charges of not less than \$65,000,000 for 1934, and that, taking the United States as a whole, whereas in 1929 only 4 per cent of the railroads, measured by mileage, operated at a loss and 96 per cent at a profit, in 1933, 58 per cent operated at a loss. Time amounting to over 18 hours had been asked by counsel for shippers, state commissioners, and others and more than 130 briefs had been filed during the week before the argument. The railroad argument as stated in the brief was in part as follows:

We are anxious at the outset to make it very clear that the commission need not concern itself, except in a rather casual way, with nice questions as to the value of the property and what constitutes a fair return. In this critical period, the railroads are asking for a sum of money which may be applied to their increased operating expenses, in the hope that favorable legislation by Congress and improved business conditions will enable them to make up the balance through the operation of economic forces. It is desirable at the outset to lay emphasis upon the fact that the case now before the commission is what may be called a revenue case, as distinguished from a rate case.

Reasonableness of the Proposed Rates

Here no effort is being made to secure a fair return upon property investment or upon the value of the property as found by the commission. The only purpose is to secure something like 60 per cent of the increase in actual operating expenses due to the increase in the cost of materials and the restoration of the wage scale.

Under these circumstances, we insist that the reasonableness of the rate structure which will result is shown by the need of revenue to meet actual operating expenses. The courts and this commission have very generally recognized that the standard of reasonableness of rates is the necessity of the carriers, where operating efficiency has been proven or is taken for granted.

It is shown in the petition that under present conditions the railroads are earning a return of 5 1/4 per cent on only 38.80 per cent of the value of their property, as that value is determined

WASHINGTON, D. C.

by taking Ex Parte 74 values and readjusting them so as to bring them down to date.

The petition shows that an increase of \$290,000,000 per annum in the operating expenses of the railroads will jeopardize the solvency of a very large number of important railroad systems.

The percentage of decline in average revenue per ton-mile, comparing 1921 to 1933, is 21.65 per cent for the United States. The greatest decline was in the Western district and the least in the Southern region. It may be interesting to compare 1929 with 1933. It will be seen that whereas the decline, as stated, in 1933 as compared with 1921 was 21.65 per cent, the decline in 1929 was 15.61 per cent.

If there had been in effect in 1933 the same rate basis that was in effect in 1921, the railroads would have had freight revenue (assuming that the same amount of traffic was handled) which would have been greater by \$687,856,000. Due to the steadily declining returns measured by average revenue per ton-mile, the railroads have suffered a loss of \$8,500,000,000 for the years 1922 to 1933.

We are not contending that these figures give an altogether accurate picture of the situation. It is freely conceded that many of the decreases in rates were due to the voluntary action of the carriers, on account of competition with unregulated forms of transportation. However, the fact remains, for whatever it is worth, that if there had been in effect throughout the period 1921 to 1933 the same rate base that prevailed in 1921 and if the railroads, under these conditions, had carried the same amount of traffic which they actually did carry, there would be no acute railroad problem at the present time. An addition of \$687,756,000 to the freight revenue of the carriers in 1933 would have enabled the railroads, as a whole, to meet their fixed charges without difficulty and left a comfortable margin to strengthen railroad credit.

Proposal Will, in Fact, Increase Revenues

Many shippers have advanced the argument that the rate basis proposed will be so high as to stifle industry, or, if this does not result, traffic will be driven to the trucks and the waterways, to the detriment of railroad revenues.

We think the record amply demonstrates the contrary. It will be remembered that the leading traffic executives of the country, acting in co-operation with practically all of the traffic experts in the service of the railroads, have agreed that the rates proposed will substantially increase rather than reduce revenues. These traffic men were left free to exercise their own judgment as to just how this desired result might be brought about. The proposal before the commission has been carefully considered, therefore, for several weeks, with only one end in view—that being the purpose to increase the revenues.

The men who handled the matter are familiar with traffic conditions upon their own lines and with traffic conditions that prevail generally throughout the country. They certainly have no desire to destroy their own properties and they are under no orders, either from their own executives or from financial interests, wherever located.

They have submitted a proposal which recognizes the intensity of truck and water competition. It is recognized that some traffic will be lost to the carriers by reason of this very moderate increase, but, on the whole, the traffic men are quite convinced that the scheme proposed will improve the present desperate revenue situation of the carriers.

It would seem that the experience of the country under the codes must lead inevitably to the conclusion that an increase of freight rates, amounting to no more than 6.7 per cent, will not drive the traffic away from the railroads, nor result in its being stifled and, therefore, unable to move at all. We say this for the reason that this record shows, beyond question, that the selling price of commodities generally has been substantially increased within the last twelve months, without preventing the free movement of the traffic in increased volume.

It will be remembered that in Docket 26,000, when a demand was made upon the carriers for reduction in rates, particularly on heavy commodities, the shippers insisted that they could not continue to pay the freight rates they were then paying and

hope for any substantial recovery in industry. This demand of the shippers was denied by the commission and yet we entered upon an era of higher prices and much larger production.

It will be seen from many statements in the record, particularly that of the secretary of the National Coal Association, that there have been very substantial increases in coal prices and yet the volume of movement has, on the whole, been higher than it was when the prices were lower. It is simply impossible to accept a theory that increases varying from 3c to 30c per ton will destroy an industry which has lately been able to advance its prices all the way from 35c to \$1.00 per ton.

Along the same line, it should be well to consider that while freight rates remain substantially constant, there are many fluctuations in selling price—these fluctuations amounting, in many cases, to more than the freight rate itself.

While we think that the record overwhelmingly demonstrates that the proposed increase in rates will improve railroad revenues so sadly in need of improvement, we urge upon the commission the proposition that if the matter were doubtful, it would be the duty of the commission to permit the railroads to exercise their judgment and that of their executives and traffic managers in selecting the method for increasing revenues.

This is true, both as a matter of law and a matter of sound policy. The courts and this commission have many times declared that they are not either the general nor the traffic managers of their railroads and that it is not the function of this administrative body to assume purely managerial duties.

It should be remembered, in this connection, that the commission is not called upon, in the public interest, to deny the rate increase. It is clear that the need of revenue is itself sufficient to establish the reasonableness of the rates. These rates being reasonable in and of themselves, it is the duty of the commission, as we conceive it, to allow the proposals to become effective, unless some injury would thereby be done to the shipping public.

Those who protest against the increase insist that there will be no increase in revenue because they, the protestants, have available and will employ other forms of transportation. This means, if it means anything, that the shippers need not pay the increased rates unless they prefer to do so, since they have available for their use trucks and boats which are willing to carry their traffic at rates lower than the railroads propose. No harm can come, therefore, to the shippers as a result of the proposed increases. For that reason, the public interest, in so far as it is measured by the welfare of the shippers, is not involved.

If the commission denies the increase, there is no way by which the correct theory can be tested. On the other hand, if the increase is allowed and experience demonstrates that the result is a substantial loss of traffic, there will be no difficulty in correcting the situation by reducing the rates. In fact, those who are responsible for the policies of the railroads can certainly be depended upon to protect their revenues in this way.

However, if they should be so obdurate as to reject such a method of securing the needed money for expenses, the commission would have the power to reduce the rates at any time and thereby save the railroads from the consequences of their folly. There is no cure, however, if the commission sees proper to exercise its judgment and reject that of railroad management with respect to the best way in which to meet this added burden of expense.

It is not contended by the carriers that later and individual adjustments may not be necessary in special cases. The railroads are dealing here with a general advance cast, resting upon the imperative need for revenue. It is impossible, as the commission has frequently recognized, to consider each individual rate in great detail. It may be necessary, of course, to make some adjustments and the carrier may be depended upon to protect its revenues by suggesting such changes in rates as conditions in the light of experience, justify.

The testimony given by numerous witnesses in support of the contention that the proposed increases would drive traffic away from the rails is somewhat lacking in consistency. Some witnesses prophesy a wholesale diversion of traffic from the rails and, at the same time, show that their own business would be injured by reason of the increased cost of transportation. They attempt to make out their case by applying the proposed increases on each commodity to the total tonnage of that commodity shipped or received by them for the past year. In some cases they estimate their increased expenses by assuming a greater tonnage than they have had, it being their thought that improved business conditions will increase their business.

It may be worthwhile to mention the evidence offered in this case by the Secretary of Agriculture. He advocated a system of rate making under which the rates would fluctuate, not over brief periods, but over some reasonable period, as commodity prices rise and fall and in accord with the general economic

conditions. We respectfully submit that these views are not in accord with the established rate making principles so often announced by the commission.

Conclusion

In conclusion, we may mention briefly the contention advanced in this case by numerous shippers that the railroads should find a solution of their problem by a wholesale scaling down of railroad obligations. In view of the fact that there has been practically no return to the stockholders in the period of depression, this must mean that the railroads should be required to repudiate their debts to their bondholders. Numerous witnesses appearing for various interests ventured the opinion that there should be launched a plan for wholesale repudiation of obligations.

These obligations were incurred through the process of borrowing money to construct and improve facilities. It is said that many of these facilities are obsolete and that the shippers should not be required to pay rates which would yield sufficient money to meet the interest on funds borrowed to purchase property not now necessary for efficient transportation.

There are numerous reasons why such a theory is unsound. In the first place, the carriers are asking for a very moderate increase and, if it is granted and if their hopes are realized, it is shown that they will have a return upon no more than one-half of the value of their property. Certainly no one can contend that more than half of the railroad property is obsolete.

In the second place, it is not true that any great amount of railroad property is no longer used and useful. It may be true that the property is not used to its full capacity, but this is the result of the depressed condition in business, coupled with the loss of traffic to unregulated forms of transportation, which loss is attributable to the fact that the railroads have not been able to compete, owing to the restrictions placed upon the railroads and the freedom of action accorded to their competitors, coupled with government subsidies. However, it is necessary to maintain terminals, tracks, station facilities and the like to handle a reduced volume of traffic. In other words, because traffic has fallen off 50 per cent does not argue that 50 per cent of the property is no longer needed.

In the third place, it is highly important that railroad credit should be preserved, if at all possible. This is particularly true at this time, when the industry is undergoing a transformation, due to altered economic conditions, which will make it necessary to spend large sums of money in buying new equipment of a different type from that now in use, the employment of which will necessitate improved maintenance conditions.

If the railroads are to regain their passenger traffic, they must speed up their trains and embark upon an extensive program of air-conditioning. In addition to increasing the speed of the trains, they must operate them at lower cost. This may mean lighter and faster trains, but it is clear that the speed of the passenger trains cannot be greatly increased without improving track maintenance conditions.

All this will cost money. It is impossible for the railroads to adopt anything like a constructive policy, except upon the theory that large sums of money may be obtained from the investing public for extensive improvements. To secure this money railroad credit must be maintained. How can anyone seriously argue that a policy of wholesale repudiation of bonded obligations will not so shatter the credit of the railroads as to make it impossible for them to secure, for a long time at least those fresh supplies of capital so essential to maintaining their position as the principal transportation agency of the country?

In the fourth place, railroad credit would not be improved by reducing fixed charges at this time, even though the railroads could escape the odium of having repudiated their obligations. We say this for the reason that the real trouble at the present time is the narrow margin between gross and net. This margin has sometimes been referred to as the factor of safety.

The statistics indicate that at the present time this margin of safety is in the neighborhood of 10 per cent. This means that a decrease in the gross of 10 per cent, or an increase in operating expenses of approximately the same amount, will wipe out the net entirely. A 10 per cent fluctuation, either in gross or net, is not an extravagant variation. It may occur at almost any time. It is clear that the investing public will have misgivings as to the soundness of a business where the margin of safety is so small a margin—so slender, indeed, that it may be wiped out almost any year by unanticipated fluctuations either in business or in the wage scale.

The problem of railroad credit is the problem of increasing the margin of safety. Obviously, this can be brought about only by increasing the gross revenue or decreasing the factor of expenses. The effort here is to increase gross revenue by a moderate amount.

We submit, therefore, that railroad credit will be strengthened by this increase in revenue much more than it would be by any reduction in fixed charges.

There is another important reason why the decision of the commission in this case will affect railroad credit. It is generally recognized that the manufacturer or the merchant has the privilege, in a period of rising costs, of passing these costs on to the consumer. The railroads are asking for the same privilege here. They are asking for no more. Just as the coal operator has increased his selling price, in an effort to cover increased costs of production, so the railroads, when it appears that their costs have been increased by \$290,000,000 annually, are asking that a part of this expense be borne by their patrons.

If the commission denies this increase and says, in effect, that the railroads shall not be permitted thus to share their burden with their patrons, the effect upon railroad credit will be disastrous. Those who have invested in railroads will thereby learn that the railroad industry, economically, is a thing apart from other industry; that whereas strictly private business, even though operating under N. R. A. codes, has been told by the government that it may increase its prices as cost of production increases, the railroads, although privately owned and privately operated, are prohibited by law from applying the same economic law to their business problems.

It seems to be obvious, if the question of railroad credit is considered important, that nothing can be more injurious than

for the Interstate Commerce Commission to say that the railroads shall not be permitted to advance their prices to meet increasing costs.

As a corollary of this proposition, although it may not be stated expressly in any opinion of the commission, the conclusion is inescapable that these increased costs must be borne not by those who use the railroads, but by those who have invested in their securities.

The argument was heard by the full membership of the commission, except Commissioner Eastman, and a committee of state commissioners. Chairman Tate, presiding, said it had been necessary to curtail to some extent the time allowed for the argument because the commission was engaged on other matters "of great public interest," presumably referring to its report on Co-ordinator Eastman's legislative recommendations. The opening argument for the railroads was made by R. V. Fletcher, vice-president and general counsel of the Association of American Railroads, who said that the balance of the time allotted to the roads would be reserved for possible discussion by other counsel of matters pertaining to rates on specific commodities.

Pacific Coast Objections to Car Pooling*

Defects in administrative and operating plans of new scheme pointed out

By W. B. Kirkland,

Superintendent of Transportation, Southern Pacific Company, Pacific Lines

UNDER the car service and per diem rules, any railroad is permitted today to use the cars of any other road, or to secure empty cars from its connections when required, by paying one dollar a day for each car used. There is nothing theoretical about these rules. They have worked satisfactorily over a considerable length of time. Under this system, the cars return to the owners automatically, whereas under the car-pooling plan proposed by the Federal Co-ordinator, there is a controlled return of equipment.

The new plan would place an additional financial burden on our transportation system, and the cost of transportation is reflected in freight rates. Therefore, the railways are reluctant to exchange a plan that is almost automatic in its workings, for one with an expensive overhead organization which is not time-tested. Further, it is doubtful if the plan would provide as efficient service to the shippers as the present handling. The present rules are not perfect, nor could there be perfection in the rules of any nation-wide organization that would have to fit the conditions of this continent. Changes have been made and are being made from time to time on a well-defined plan after careful analysis.

National Committee Appointed

Following the Co-ordinator's first release on October 13, 1933, which criticized the railroads' practices in handling empty cars, each of the three railroad regional co-ordinating committees appointed a committee of practical railroad transportation officers to analyze Mr. East-

man's release. To facilitate the study of the report, it was decided to combine the special committees from the three regions and secure the assistance of the American Railway Association and the Bureau of Railway Economics.

The joint committee met in Chicago in November, 1933, and held a series of conferences that extended into April, 1934. During this time, representatives of 29 railroads were called before the committee to explain their car-handling methods in detail. The special committee's completed report was passed to the Co-ordinator with certain recommended changes in the car service and per diem rules.

The report opposed a car pool that would disregard ownership costs, and that would remove direct control of equipment from the railroad which is responsible for supplying cars to its shippers. This report was not approved by the Co-ordinator. The innovations of the new plan, including the economies claimed, and its practicability, are necessarily subject to considerable analysis. Railroad transportation officers are doubtful as to its adaptability to the needs of the shipping public.

Savings Doubtful

A saving of \$75,000,000 annually is claimed; this is computed on the basis of a check made in a selected week of 1933, which covered only certain districts on a few representative railroads. This estimate is theoretical and excessive, as there were not sufficient data assembled to prove that this enormous saving could be made.

In the proposed plan, provision is made for a per diem charge against each railroad in the pool to cover

* From an address delivered at the December meeting of the Pacific Coast Transportation Advisory Board.

interest, depreciation, insurance and taxes on each car, as well as administrative and other expenses incident to the operation. It is further provided that each participating railroad shall pay the expense of maintaining pool cars, allocated on the ratio that the mileage of pool cars on its rails bears to the aggregate pool-car mileage. Therefore, it is doubtful what the per diem balance would be on any railroad, and what would be the additional cost of repairing cars. There would also be an enormous additional expense in securing data and making reports to the pool manager of all cars on line. To compile these reports it will be necessary to have daily information as to interchange balances between railroads, condition of cars, requirements and surplus cars at each station, and cars moving in trains. This expense would offset a large part of the alleged saving to be made in empty car mileage.

It can be readily understood why the railroads that have been provident in building equipment to handle the traffic they originate, and that load off-line considerably more cars than they receive, are reluctant to accept any drastic change until all the facts are developed.

All Cars Not Alike

The conclusion in the Co-ordinator's report concerning the uniform size and interchangeability of box cars is subject to argument. The western railroads have provided themselves with large cubical-capacity equipment, such as 50-ft. auto cars, and high and wide 40-ft. box and auto cars, to meet the demands of their shippers. Furthermore, the interchangeability is restricted by the condition of the cars, the western railroads being required to maintain a larger percentage of their ownership in Class A condition than do the eastern roads. This is because the majority of the traffic originating on the Pacific Coast requires the highest-grade cars available, whereas the cars received under load from the East with merchandise, machinery, automobile parts, etc., and from the inter-mountain country under loads of coal, are not generally suitable for the eastward high class loading.

The report shows the trend of traffic since 1920 as a basis for comparing empty car mileage with loaded car mileage. This fails to take into consideration the constant change in car requirements. For example: A few years ago automobiles were loaded on flat cars and in gondolas, but now they are loaded in house cars, many of which are equipped with mechanical loading devices. It has also been necessary to equip a large number of cars with racks for automobile frames and engines, because of the establishment of assembling plants in the Pacific Coast territory, and there is no eastward movement of these commodities. Commodities such as salt and sulphur formerly moved in cars suitable only for rough freight, and lumber in open-top cars; they now require high class cars. Commodities such as newsprint, paper, bags, hampers, containers, wallboard, cotton and linters formerly moved in small cars, but now require equipment of large cubical capacity. These continual changes in equipment requirements make it impossible to use the trend of traffic as a basis for comparing empty car miles with either loaded or total car miles.

Carrying Charges Saved?

Another proposal in the plan is that, by reducing the ownership of equipment 10 per cent, a saving of \$25,000,000 a year could be made in carrying charges. There are a number of cars that have been laid aside as unfit for service, upon which there is little, if any, carrying charge. While these cars are still being shown in the

equipment register, they have not been in service for some time. If any reduction were made in ownership, these cars, and not the ones in Class A condition, would be selected. Further, any slowing down of the movement of equipment, which is inevitable under a car pool, would make it necessary to have a larger number of the better cars, instead of fewer.

There are various opinions as to what constitutes a Class A car. In the West, cars are generally designated as belonging to one of four classes, A, B, C and D, and as between single and double-sheathed, depending upon the type of lading they can safely transport. It is more economical to incur a few empty car miles to get a certain class of car into position for a load than to clean a car that has been loaded with oil barrels which have leaked oil, or with green hides or other commodities that contaminate a car and make it unfit for such high class lading as sugar, salt, dried fruits, flour, tin cans or cement.

Organization Faulty

The plan provides for an overhead organization with autocratic control of pooled equipment. The country is divided into five districts, with headquarters in Chicago for the Middle West and Northwest, one in Cleveland for the East, one in Boston for the Northeast, one in Atlanta for the South, and one in St. Louis representing the entire Pacific Coast.

This plan is contrary to the fundamental principles of private operation, in view of the fact that it proposes to take away from responsible officers of the railroads the repair, control and distribution of their property. The traffic advantage which a provident railroad has by maintaining an adequate supply of equipment would be eliminated and there would be no incentive for a railroad to hold on hand, for the benefit of its shippers, an adequate supply of cars for their prospective use.

It is significant that, in the merchandise traffic survey which was conducted by the Co-ordinator's Transportation Bureau, a plan is set up in which it is considered to the best interests of the shipping public to provide two agencies for the pooling of merchandise traffic, at an added expense of \$10,000,000 a year, instead of the one-agency plan, nation-wide in operation. It, therefore, appears inconsistent that one branch of the Co-ordinator's staff considers the competitive feature so vital, while another branch is setting up a nation-wide non-competitive pool of box cars.

Would Further Deplete Pacific Coast Car Supply

It is proposed in the study of merchandise handling to save an enormous amount of empty car mileage each year by consolidating merchandise cars now moving on various railroads. That traffic moves principally westward, and this consolidation would further deplete the car supply on the Pacific Coast, as more traffic is originated there than is received. If the cars do not come west loaded, they will have to be moved west empty to balance the equipment. So long as railroads are operated, there is going to be considerable empty mileage in meeting the unbalanced traffic situation and the varying traffic necessities of the country's shippers as to special equipment.

In the event that any pooling plan is adopted, it should be tried out by regions instead of on a national scale. However, the railroads are giving renewed consideration to the question of improved methods of car handling, and they themselves will be able to solve this problem by making changes in existing practices that are consistent with supplying the best and most efficient service to the public.

Expenditures for Railway Supplies Up 160 Million

Purchases for 1934 largest in three years, despite severe slump since June—Some increases in stocks

WHILE interest in railway buying centers around expenditures and plans for a new motive power, new cars and new construction, and the newspapers editorialize on streamlined trains, air-conditioning and highway crossings, the facts, although not detracting from the activity of the carriers in such avenues of purchasing, forbid so narrow a conception of railway spending (particularly in a period when buying and employment are topics of national importance) by throwing light on the expenditures for supplies and parts.

The time is premature for complete figures of the year just ended but, with data for the first 10 months from roads earning 95 per cent of the operating revenues and with fractional figures for November, it is now estimated that railway purchases, exclusive of new equipment, amounted to approximately \$625,000,000 in 1934. This is more than was indicated by earlier reports and exceeds the corresponding expenditures in 1932 and 1933 by \$180,000,000, or 42 per cent, and \$160,000,000, or 35 per cent, respectively. It lacks \$70,000,000, or 6 per cent, of equaling the corresponding expenditures in 1931.

Purchases for the 12 months, consisting of approximately \$211,000,000 estimated to have been spent for locomotive fuel, \$39,000,000 for cross ties, \$32,000,000 for rail and \$340,000,000 for miscellaneous materials, show an 18-per cent increase in fuel purchases for 1933, a 100-per cent increase in tie purchases, a 200-per cent increase in rail purchases and a 50-per cent increase in miscellaneous supplies, which include lumber and repair parts for locomotives and cars. The expenditures with manufacturers, exclusive of those made for new equipment, were 62 per cent of the total purchases of material and supplies in 1933 and 67 per cent of the total in 1934.

Impressions that the increased purchases were made with federal loans are only partly correct. While the

loans which the railroads authorized by the P.W.A. amounted to \$199,000,000, the money was not all applied to the purchase of materials and supplies, and all of the roads did not participate in these loans, while increases in purchases were made on all railroads. The size and variation of the increases, moreover, are too large to have been caused by higher material costs, al-

Materials and Supplies Purchased—1934*

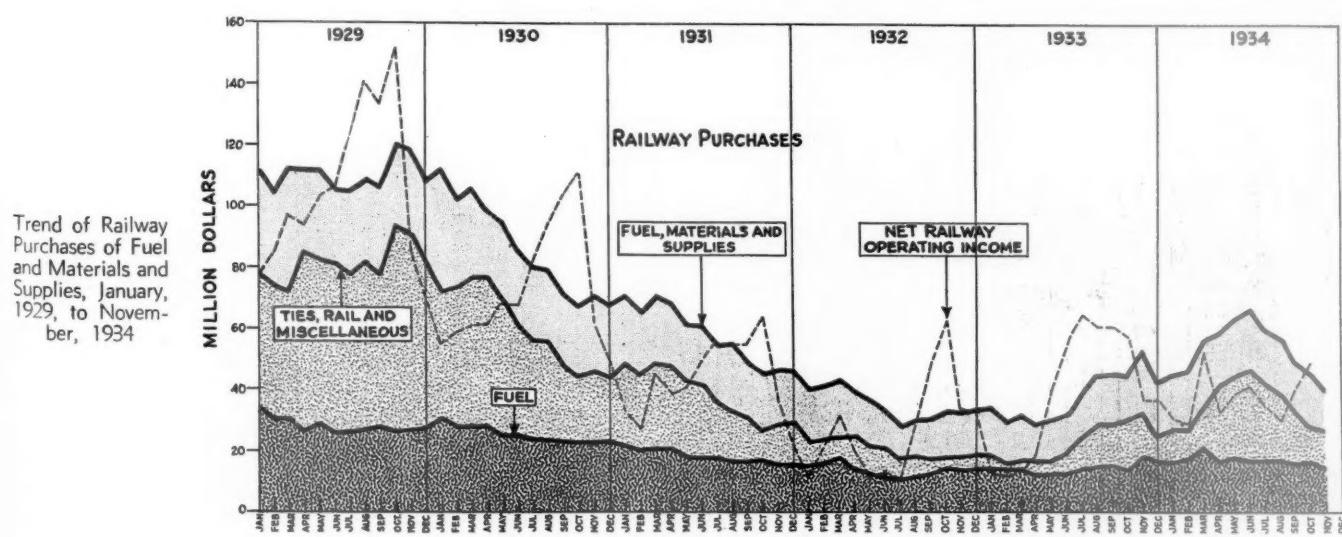
	Fuel	Cross Ties (000)	Rail (000)	Other Material (000)	Total (000)	Total, Less Fuel (000)
January	\$17,630	\$2,100	\$1,570	\$24,300	\$45,600	\$27,970
February	18,700	2,550	1,500	23,500	46,250	27,550
March	22,100	3,000	4,300	28,100	57,500	35,400
April	17,200	3,400	7,200	31,300	59,100	41,900
May	18,200	3,960	5,140	36,200	63,500	45,300
June	17,700	4,380	4,420	38,250	64,750	47,050
July	17,850	3,510	3,740	34,900	60,000	42,150
August	17,700	3,790	2,420	33,590	57,500	39,800
September	17,000	3,700	1,220	28,080	50,000	33,000
October	17,600	3,240	560	24,450	45,850	28,250
November	14,900	2,700	100	20,800	38,500	23,600

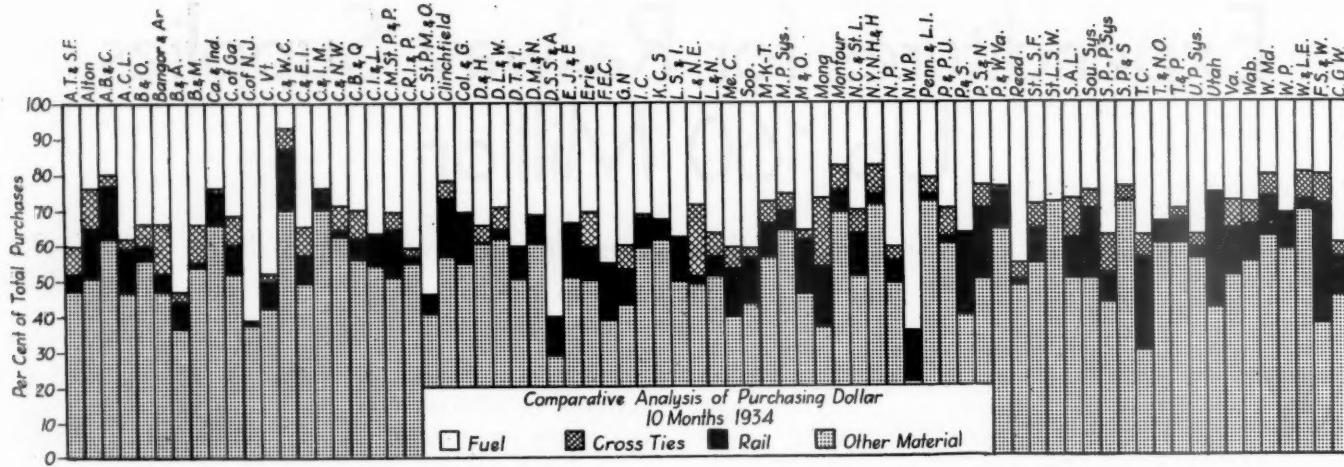
*Subject to revision.

though these costs were factors in the increased expenditures, as will be discussed in a later issue. The increases in purchases are principally attributed to better earnings in the earlier part of the year and to increased maintenance work.

Increases General

The purchases made by different roads up to October present many striking increases over the corresponding purchases in 1933. The increases for fuel and supplies were \$5,481,000 on the Atchison, Topeka & Santa Fe, or 38 per cent; \$2,525,000 on the Atlantic Coast Line, or 52 per cent; \$10,501,000 on the Baltimore & Ohio, or 110 per cent; \$3,565,000 on the Boston & Maine,





How Purchases for the First 10 Months of 1934 Were Divided on Representative Railroads

or 72 per cent; \$4,167,000 on the Chesapeake & Ohio, or 52 per cent; \$3,952,000 on the Chicago & North Western, or 40 per cent; \$4,059,000 on the Chicago, Burlington & Quincy, or 45 per cent; \$4,228,000 on the Chicago, Milwaukee, St. Paul & Pacific, or 42 per cent; \$2,861,000 on the Chicago, Rock Island & Pacific, or 38 per cent; \$3,647,000 on the Erie, or 40 per cent, not counting P.W.A. expenditures; \$5,407,000 on the Missouri Pacific lines, or 46 per cent; \$10,501,000 on the New York Central lines, or 30 per cent; \$36,786,000 on the Pennsylvania, or 110 per cent; \$4,800,000 on the Southern lines, or 53 per cent; \$7,413,000 on the Southern Pacific—Pacific system, or 82 per cent; \$2,200,000 on the Union Pacific system, or 12 per cent; and \$2,400,000 on the Wabash, or 62 per cent. Expenditures were larger on roads in receivership as well as on those not in receivership. Large expenditures were made last year for rail and ties by roads which were entirely out of the market for these materials in 1933 and 1932.

Sharp Declines Since June

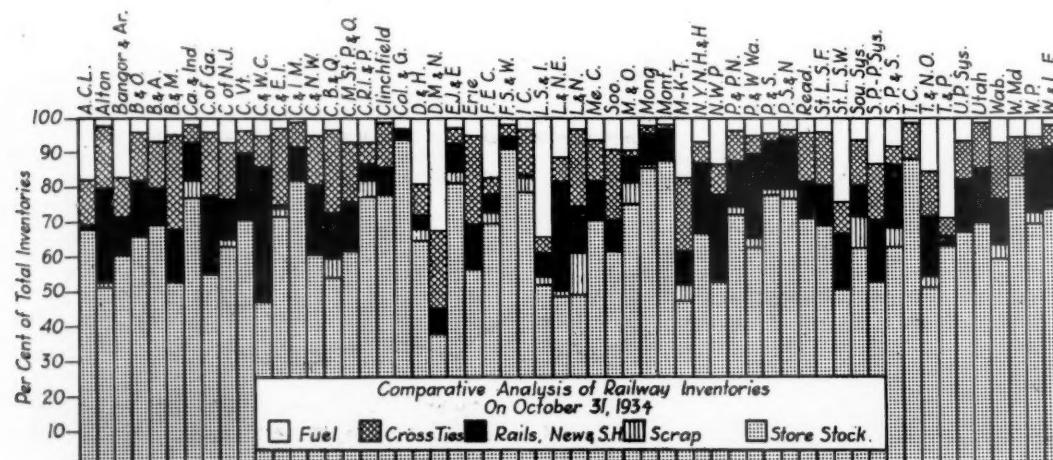
While the expenditures made by the roads last year for fuel and supplies exceeded those of the year previous by a wide margin, the gain resulted largely from the volume of buying in the first half of the year. This is shown by the value of materials which the roads, collectively, are estimated to have received each month. Monthly expenditures for fuel and cross ties were uniformly maintained, but those for rail, after increasing from \$1,570,000 in January to \$7,200,000 in April, according to the most recent figures, declined to \$560,000 in October, and those for miscellaneous materials, after

increasing steadily from \$24,300,000 in January to \$38,250,000 in June, declined month by month to \$24,450,000 in October. Total purchases, after rising from \$45,600,000 in January to \$64,750,000 in June, declined steadily to \$45,850,000 in October, and the best available data at this time indicate a further reduction in total purchases of fuel and materials and supplies to \$38,500,000 in November, which is less than the corresponding expenditures in January.

These figures are striking proof of the fact that the railroads must be allowed adequate net earnings if they are to contribute through their purchases to the restoration of prosperity. In the first six months of the year, when net railway operating income showed an increase of \$71,000,000 over the preceding year, railway purchases of materials and supplies, excluding fuel, amounted to approximately \$225,000,000. In the last six months of 1934, when net railway operating income fell some \$100,000,000 below the same months in 1933, railway purchases of materials and supplies, again excluding fuel, showed a marked decline to a total of approximately \$185,000,000.

There is naturally a slight lag before changed trends in earnings are reflected in railroad buying. The monthly figures illustrate both this lag and the inescapable relationship between the two factors. Fuel is excluded in the following figures of material and supply purchases, as this item, of necessity, is relatively steady.

Net earnings in January, 1934, were \$17,000,000 above January, 1933, and purchases in January, last year amounted to \$27,970,000. In February, March and April of 1934, net earnings were, respectively, \$19,-

Comparative Inventories,
Oct. 31, 1934—Rail and
Scrap Included with
Store Material Where
Not Otherwise Shown

000,000, \$41,000,000, and \$13,000,000 above 1933; and purchases increased from \$27,550,000 in February, to \$35,400,000 in March, and again to \$41,900,000 in April.

Net earnings in May and June, 1934, declined somewhat below 1933, but due to the lag, and the hope that these declines might be temporary, purchases increased still further to \$45,300,000 in May, and to \$47,050,000 in June. But as each succeeding month told the same story of reduced net earnings, railroad purchases of materials and supplies fell to \$42,150,000 in July, to

Purchases of Fuel and Supplies—10 Months

	1932	1933	1934
Alton.....	\$ 1,921,135	\$ 1,605,601	\$ 3,053,056
A. T. & S. F. Lines.....	16,192,763	14,616,585	20,097,692
Atlanta, Birmingham & Coast.....			589,276
Atlantic Coast Line.....		4,857,590	7,382,487
Baltimore & Ohio.....	8,967,617	9,303,569	19,804,459
Bangor & Aroostook.....	1,019,327	793,396	1,077,172
Boston & Albany.....	3,050,607	2,920,164	3,416,182
Boston & Maine.....	6,071,917	5,051,649	8,616,378
Cambria & Indiana.....			116,344
Central of Georgia.....	1,268,752	1,834,028	2,411,128
Central of New Jersey.....	3,614,654	3,223,832	3,345,610*
Central Vermont.....	934,138	971,323	1,040,138
Charleston & Western Carolina.....			357,001
Chesapeake & Ohio.....	6,640,337	8,059,219*	12,226,682
Chicago & Eastern Illinois.....	1,369,215	1,413,399	1,895,878
Chicago & Illinois Midland.....	250,109	340,330	429,204
Chicago & North Western.....	9,795,332	9,881,890	13,833,006
Chicago, Burlington & Quincy.....	8,818,743	8,974,310	13,033,797
Chicago Great Western.....	2,518,144	2,492,427	2,889,426
Chicago, Ind. & Louisville.....		875,255	878,868
Chicago, Mil., St. P. & Pac.....	12,742,668	10,172,649	14,400,668
Chicago, R. I. & Pacific Lines.....	7,951,404	7,517,041	10,378,771
Chicago, St. P., Minn. & Omaha.....	2,488,585	2,372,383	2,927,072
Clinchfield.....	493,130	497,152	830,368
Columbus & Greenville.....	129,785	123,337	179,200
Delaware & Hudson.....	4,349,599	3,590,861	4,430,453
Delaware, Lack. & Western.....	5,714,569	5,332,293	6,290,374
Detroit, Toledo & Ironton.....	305,338	332,602	629,246
Duluth, Missabe & Northern.....	468,605	803,544	1,464,742
Duluth, S. S. & Atlantic.....		223,938	351,341
Elgin, Joliet & Eastern.....	665,287	1,258,993	1,144,419
Erie.....	10,510,920	9,007,066	12,654,323
Florida East Coast.....	747,022	914,061	1,145,499
Fort Smith & Western.....			113,423
Great Northern.....	8,513,199	6,786,193	12,792,451
Illinois Central.....	11,632,817	11,875,669	15,706,612
Kansas City Southern.....	1,168,131	1,050,478	1,375,738
Lake Superior & Ishpeming.....	27,907	139,190	204,921
Lehigh & New England.....	319,042*	424,817	606,012
Long Island.....		1,496,925	1,976,507
Louisiana & Arkansas.....	343,825	395,149	808,636
Louisville & Nashville.....	7,376,919	7,355,182	8,534,151
Maine Central.....		1,381,437	2,526,714
Minn., St. P. & S. S. Marie.....	3,543,149	3,003,433	3,785,202
Missouri-Kansas-Texas.....	2,256,255	2,373,883	4,172,371*
Missouri Pacific.....	8,912,002	11,990,507*	17,397,134
Mobile & Ohio.....	1,006,109	1,117,209	1,279,764
Monongahela.....			331,213
Montour.....	194,492	223,868	312,412
Nashville, Chat. & St. Louis.....	1,607,667	2,240,786	2,227,203
New York Central System.....	31,020,187	37,937,263	48,448,461
New York, Chicago & St. Louis.....	4,103,530	3,289,977*	4,637,651
New York, New Haven & Hart.....	5,291,401	4,867,842	8,837,178
Northern Pacific.....	7,306,353	6,359,684	8,866,437
Northwestern Pacific.....	325,414	255,052	301,872
Pennsylvania.....	33,450,150*	32,594,264	69,380,821
Pere Marquette.....	1,994,471	3,197,781*	3,924,077
Pittsburg & Shawmut.....		98,523	89,040
Pittsburg, Shawmut & Northern.....	135,144	115,915	189,430
Pittsburgh & West Virginia.....	147,452	56,945	302,028
Reading.....	5,905,344	4,800,598	6,757,279*
Richmond, Fred. & Potomac.....		964,674	1,222,969
St. Louis-San Francisco.....	4,673,228	7,009,754	8,530,505
St. Louis Southwestern.....	1,091,708*	831,037	1,173,140
Seaboard Air Line.....	4,229,534		8,183,972
Southern.....	11,219,887	9,076,863	13,872,296
Southern Pacific—Pac. Sys.....	11,086,703	9,031,881	16,444,226
Southern Pacific—Tex. & La.....	3,054,755	2,618,936	4,780,364
Spokane, Portland & Seattle.....	607,490	598,317	1,604,238*
Tennessee Central.....	200,386	276,909	333,918
Texas & Pacific.....	2,068,934	2,060,302	3,074,173
Union Pacific.....	15,595,114	17,570,361*	19,770,145
Utah.....			70,325
Virginian.....			1,297,466
Wabash.....	4,289,336	3,897,973	6,283,656
Western Maryland.....		1,708,933	3,007,533
Western Pacific.....	1,498,946	1,607,640*	2,270,000
Wheeling & Lake Erie.....	620,099	1,185,117	2,054,836

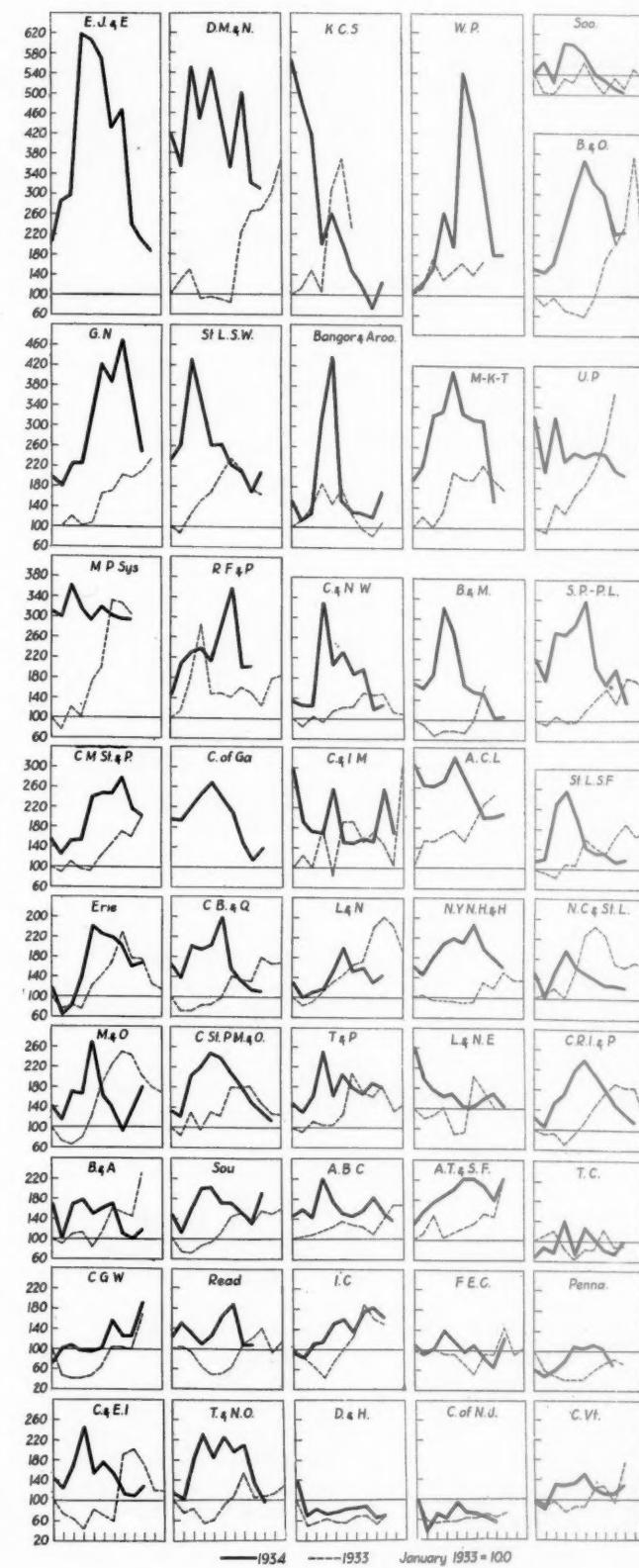
*October estimated.

\$39,800,000 in August, to \$33,000,000 in September, to \$28,250,000 in October, and to \$23,600,000 in November.

The purchases in the aggregate were larger every month than in 1933, but the slump in expenditures since last June is the most severe that has been experienced since 1932, and reflected sharp reductions in buying on most of the roads, as is clearly brought out in the

charts. The railroads, collectively, appear to have expended approximately \$75,000,000 less since June than they would have expended if the rate of buying in June had been maintained during the second half of the year.

This recession in railway buying has been a blow to the durable goods' industry after the impetus given to business and employment by the increased railway buy-

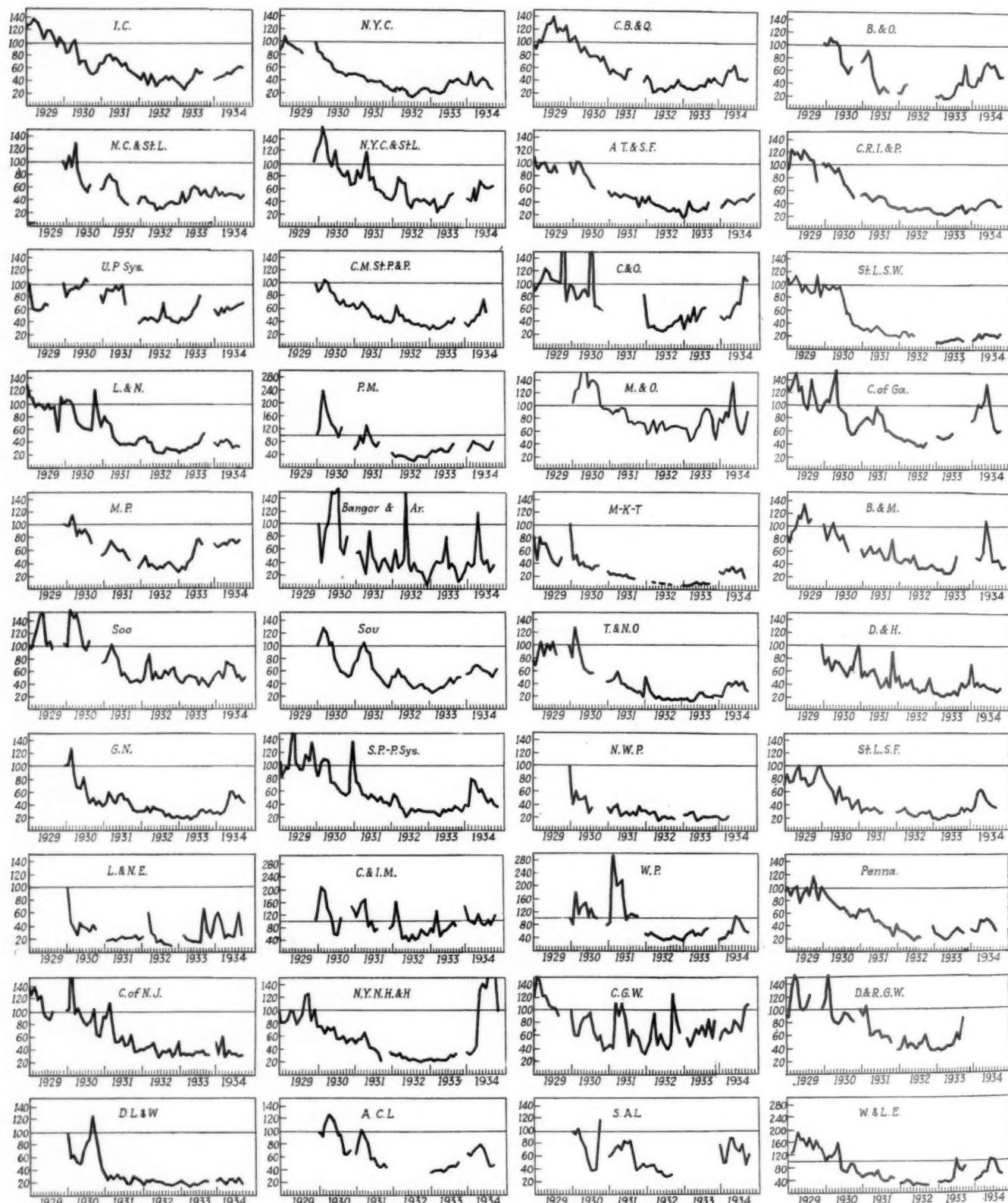


Purchases from Manufacturers (Excluding Fuel, Ties, Rails and Equipment) on Selected Roads, January, 1933, to November, 1934. January, 1933, equals 100. Data Missing Where Breaks Occur in Charts

ing earlier in the year and, reflecting as it does inadequate earnings rather than reductions in the need for materials by railroads, emphasizes the persistent demand in the public interest for constructive treatment of the transportation problem by those in private and business life who share the responsibility for recovery programs.

The book value of supplies in the hands of the railroads on October 31, 1933, based on data available at

this time, was approximately \$310,000,000, consisting of approximately \$19,500,000 of locomotive fuel, \$42,000,000 of ties, \$39,000,000 of new and second-hand rail, \$202,000,000 of store stock and approximately \$7,500,000 of unsold scrap. As compared with October 31, 1932, the inventories show increases in the book value of total inventories of approximately \$4,500,000, or 6 per cent, a reduction in fuel balances of approxi-



Fuel and Materials and Supplies Purchased on Selected Railroads, January, 1929, to November, 1934. January, 1930, Equals 100. Data Missing Where Breaks Occur in Charts

mately 5 per cent, a reduction in the tie balance of approximately 8.5 per cent, an increase in the rail balance of approximately 15 per cent, and an increase in the storehouse stock of approximately \$19,500,000, or 15 per cent. Total book balances were larger on 39 roads and smaller on 19 roads in a list of 58 roads for which comparable data are available, while rail balances were larger on 31 and smaller on 20 roads of 51 reporting figures.

Divisions of Supplies in Stock—October 31 (Estimated)

	Fuel (000)	Ties (000)	Rails (000)	Store Stock (000)	Scrap (000)	Total (000)
1933.....	\$20,500	\$50,000	\$34,000	\$182,500	\$8,500	\$295,500
1934.....	19,500	42,000	39,000	202,000	7,500	310,000

Fuel and Materials and Supplies in Stock—Book Values on October 31

Road	Rail—New & S. H.		Total	
	1933	1934	1933	1934
Atlantic Coast Line.....	\$1,286,021	\$ 51,812	\$3,510,242	\$3,358,013
Alton.....	123,168	335,909	499,551	1,129,940
Baltimore & Ohio.....	1,380,875	1,560,760	8,894,049	9,609,825
Bangor & Aroostook.....	58,008	99,302	802,783	844,822
Boston & Albany.....	142,178	165,529	1,430,933	1,559,757
Boston & Maine.....	309,328	743,252	4,896,984	5,176,957
Cambria & Indiana.....	1,249*	5,418	44,004*	47,551
Central of Georgia.....	179,410	245,032	904,483	1,063,598
Central of New Jersey.....	215,061	199,416*	1,826,848	1,581,713*
Central Vermont.....	115,377	89,600	461,577	458,116
Chesapeake & Ohio.....			3,552,106*	4,325,511
Chicago & East. Illinois.....	28,066	12,176	557,039	632,416
Chicago & Ill. Midland.....	4,001	26,639	226,609	282,890
Chicago & North Western.....	999,071	1,472,394	6,876,217	7,111,968
Chicago, Burl. & Quincy.....	1,128,771	1,029,716	7,781,596	7,998,041
Chicago, Mil., St. P. & P.	414,915	1,430,472	8,393,686	8,756,838
Chicago, Rock Island & Pac.	217,638	254,751	5,481,783	5,278,805
Chicago, St. P., M. & Omaha.....	167,236	144,074	1,037,495	1,023,379
Clinchfield.....	22,387	36,055	516,017	465,567
Columbus & Greenville.....	2,608	3,827	112,408	120,664
Delaware & Hudson.....	109,394	92,311	2,578,104	2,429,411
Duluth, Missabe & Northern.....	107,122	90,916	1,124,102	1,090,224
Duluth, S. S. & Atlantic.....	37,852	61,321	273,259	281,223
Elgin, Joliet & Eastern.....	95,541	77,861	1,091,971	996,804
Erie.....	522,934	514,852	3,285,014	3,899,272
Florida East Coast.....	181,967	80,337	1,638,918	1,553,179
Illinois Central.....	76,932	75,587	7,298,203	8,338,044
Lake Superior & Ishpeming.....	26,048	16,507	234,306	241,039
Lehigh & New England.....	48,616	132,293	350,674	417,481
Long Island.....	7,515	7,000	812,915	928,443
Louisiana & Arkansas.....	63,803	33,022	448,754	522,933
Louisville & Nashville.....	1,226,936	1,183,755	8,895,816	8,951,893
Maine Central.....	132,774	166,431	1,443,501	1,548,065
Minn., St. P. & S. S. Marie.....	248,868	177,861	1,921,682	1,913,678
Missouri-Kansas-Texas.....	117,594*	333,818*	2,336,321*	3,359,591*
Mobile & Ohio.....	39,851	44,228	667,626	631,827
Monongahela.....		27,882		269,607
Montour.....	4,486	12,050	141,367	153,916
New York Central.....			32,416,757	
New York, Chicago & St. L.			1,601,075*	1,461,249
New York, New Haven & Hart.....	449,222	1,450,817	5,547,882	6,941,546
Northwestern Pacific.....	144,109	65,377	445,578	256,222
Pennsylvania.....	1,283,289	3,988,900	27,197,317	34,067,728
Pere Marquette.....			1,238,994*	1,281,340
Pittsburg & Shawmut.....	19,425	14,184	106,821	87,464
Pitts. & West Virginia.....	15,039	26,856	86,521	98,292
Pitts., Shawmut & Northern.....	13,086	16,344	100,082	103,064
Reading.....	717,805*	539,396*	5,230,363*	4,856,428*
Richmond, Fred. & Potomac.....			765,561	827,923
St. Louis-San Fran.....	372,040	507,890	3,425,403	4,344,083
St. Louis Southwestern.....	566,556	206,048	2,435,606	1,278,783
Southern.....	684,228	513,007	5,232,445	5,653,718
Southern Pacific—Pac. lines.....	4,110,539	1,883,685	13,525,881	10,442,768
South. Pac.-Tex. & La. lines.....	898,333	796,647	4,181,791	4,508,819
Tennessee Central.....	None	None	198,366	209,920
Texas & Pacific.....	58,740	88,542	2,732,256	2,937,360
Union Pacific.....	2,136,238*	2,523,452	13,571,544*	14,771,662
Utah.....		28,403		185,701
Wabash.....	242,695	293,812	1,906,537	1,800,478
Western Maryland.....				1,350,451
Western Pacific.....	37,400*	371,953	1,791,224*	1,991,475
Wheeling & Lake Erie.....	98,003	176,634	620,975	971,773

*September.

The inventory figures, while incomplete for the year, reflect considerable activity on some roads in disposing of accumulations of retired equipment and obsolete materials; also the suspension of many maintenance programs for which large quantities of material, including rail and lumber, had been purchased. How much the book balances have been changed by increases in material costs during the past year is still problematical.

President Plans One Agency To Regulate All Transport

(Continued from page 42)

ing to highway and waterway transportation such as were proposed by Mr. Eastman last year.

The President's reference is undoubtedly to the plan which has been advocated by Co-ordinator Eastman in most of his recent speeches for giving jurisdiction over all competing forms of transportation to a reorganized Interstate Commerce Commission, expected to be more completely described in his forthcoming report which will be accompanied by a draft of a bill for the purpose. Such a plan has also been recommended to the President recently by a Cabinet committee, although the extent of the reorganization proposed is such that it is not clear whether the commission contemplated would be an enlarged I.C.C. or an entirely new commission somewhat like the old one, with separate sub-commissions or divisions for the different transportation branches. It is apparently the intention also to lodge some of the functions which have been exercised by the commission in the Department of Commerce—the functions which are described loosely as "administrative or executive," as distinguished from the "quasi-judicial" functions exercised in rate-making. The functions which thus might be transferred and expanded to cover the other forms of transportation might include those relating to safety inspection, accounts, statistics, etc.

Neither has it been made entirely clear as to what significance, if any, should be attached to the words "regulatory administration," although the President has occasionally in offhand speaking used the word "administration" in referring to functions of the commission or of the co-ordinator which are commonly supposed to be purely regulatory rather than managerial.

Mr. Eastman's Point of View

In an address last week at Reading, Pa., Mr. Eastman said: "The only important arguments in favor of separate commissions are, first, that each form of transportation has its own peculiar conditions and special problems which require specialized attention; and, second, that separate commissions could act more quickly than a larger centralized body. Both of these needs can be met by an appropriate reorganization of the Interstate Commerce Commission which will enable it to combine specialization with co-ordination, and at the same time make possible a more flexible and less unwieldy procedure for the conduct of its business. Regulation by code is open to the same objections as regulation by separate commissions, but there are additional grounds of objection.

"If self-regulation by codes were the answer, the logical and inevitable thing to do would be to apply this system of regulation to the railroads as well as to the trucks and other forms of transportation. There are, however, certain desirable things, not inconsistent with commission regulation, which can often be better accomplished by a code than in any other way; and the opportunity to accomplish such results should be open. The organization of the industry which is brought about and fostered by a code can be of great help to Commission regulation. There is even no reason why a transportation industry in its code should not undertake self-regulation of rates, so long as regulation of rates by the commission is not precluded, where necessary. All of these opportunities should be open, but whatever

(Continued on page 54)

Materials Economics in Light-Weight Railway Cars

The strength-weight relation for the material limits the minimum weight of structure attainable without sacrifice of safety

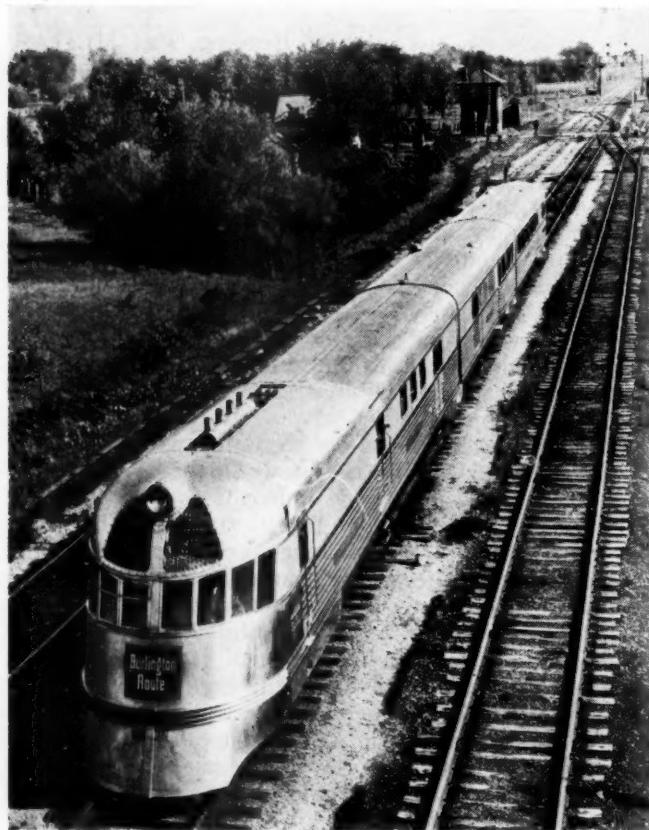
By E. J. W. Ragsdale

Chief Engineer, Rail Car Division, Edward G. Budd Mfg. Co., Philadelphia, Pa.

THE engineer always hopes that some day he may create an ideal design and then be able to find a material suited to it. Rarely does he realize this ambition. He usually finds the material already stipulated, either through price, prejudice or matters of policy. These, in turn, are very apt to have been originated in some expressed desire or demand of the customer. This gentleman then finds himself in the position of the patient who tells the doctor what ails him and how to cure it. Whether or not he gets his way, he usually complains of the treatment.

Strangely enough, the business man who can appreciate the worth of an ideal investment, and who willingly pays a premium for it, will often fight shy of any engineering ideal, although the returns may be even greater and more certain. He will, furthermore, insist on good stuff in the suit which he wears, and then chisel on the material for plant equipment whose maintenance is delegated to someone else.

The situation is understandable when one reflects that



The Zephyr Has Demonstrated Marked Earning Capacity

the choice of material is never an easy one. There are so many considerations involved that the engineer himself is often perplexed. Decision should rest upon the result of elaborate study and research extending over years, perhaps. However, such is the nature of competitive business that the need is rarely anticipated. It usually follows hysterically upon the discovery of some new demand. There is then no time for deliberation, and, decision being the function of management, the engineer finds himself not only with a problem to solve, but with the answer already given. It requires a lot of back-figuring.

Such is already the history of the development in light-weight railway equipment. Having originated with stainless steel and the aluminum alloys in debatable positions and having successfully demonstrated the doctrine of lightness as against needless weight, this development is now confronted with a hastily conceived competition based largely upon the hope that cheaper steels can be more efficiently employed than they ever have been heretofore. Entirely lost from sight are the fundamentals of light-weight construction. Most immediate seems to be the need for a cheaper material, and just how this is to be maneuvered into competitive position, structurally, is a matter for engineers to argue about.

The Weight-Strength Relation

So far, engineers have been arguing. There has been plenty of argument found in the fact that stainless steel, although three times as strong as the aluminum alloys, is also three times as heavy and that both cost approximately the same. That argument has to be settled on the basis of practical utility. When, however, there is introduced into the picture newer alloys of steel whose weight-strength relation is only half as favorable as that of stainless or the aluminum alloys, the argument had better be returned to where it originated, namely, with the business man. Shorn of its trappings, his argument is briefly about as follows:

- 1—Light weight train construction seems to be here to stay.
- 2—Stainless and aluminum are all right, maybe, but 40 cents a pound is too much to pay for any building material.
- 3—Mild steel is obviously out. It is identified with the old construction. Why not then get a better steel, but it must be a cheap one?

4—What if it does weigh a bit more? It will still be lighter than the old equipment and this talk of weight economics is overdone, anyhow.

5—Factors of safety? How to put it together? What is the history behind this steel? Oh! let the engineers figure out that one.

The admission that lighter construction is here to stay is at least tribute to the materials and organizations which have effected that change of thought. Certainly,

40 cents a pound is a lot to pay for metal when one recalls that mild steel can be bought for two. When, however, that metal alone permits accomplishment of an idea, and if that idea is worth the price, why not first investigate the worth before rejecting the idea on account of the cost.

The newer low alloys of steel belong to "weight reduction" as distinguished from true light-weight construction. There, they serve a useful purpose. They permit rehabilitation of conventional type equipment; they do not, however, permit even partial realization of the ideal. The cycle of weight increment or decrement can be strangely vicious or beneficial. An unwise use of these alloys will not only fall short of the ideal, but leave it little better off than the revamped conventional. Light trains are either right or wrong. If wrong, they are too expensive at any price; if right, the compromised design will prove to be the more costly.

Safety is the watchword of railroading, be it in equipment or in its operation. In equipment, this is expressed by what is known as the factor of safety. This factor, rather arbitrarily chosen, is based on experience in a certain type of service. When speeds increase, so does the requirement of safety. Any material not sympathetic to this had best be confined to use within its limitation. The conventional safety factor for equipment running at some 60 miles an hour is about four; that for high-speed streamlined trains should be not less than six. Only high tensile metal can give this without undue weight.

Some Arithmetic of Light Weight

Engineers do try to figure these things. They also try to figure out how best to use and assemble the materials employed, but they do not know how to divide a greater force by a lesser strength and get the same weight. Nor do many of them yet seem to realize how 40-cent stainless steel can ever hope to compete with any low-priced alloys. The arithmetic is really quite simple. We start off with the Burlington Zephyr as an example and assume only that, if made of any other material than stainless, the factor of safety will be the same.

The new alloys have a tensile strength of some 72,000 lb. per sq. in. as compared with 150,000 lb. for stainless. It is fair to estimate then that two pounds of one is required to do the same work as one pound of the other. Light-weight construction requires a surprisingly few pounds of either.

The loaded weight of the Zephyr is 245,000 lb. Deducting trucks and traction motors, the total center-plate loads become 175,000 lb. Of this, only 46,000 lb. are represented by the stainless structure. Had a low alloy of steel been used, the total center-plate loads would have increased to 221,000 lb. This would have increased structural requirement and added proportionately another 24,000 lb. of alloy, making the new total structural weight 116,000 lb. instead of the original 46,000 lb. of stainless,—an increase of 40 per cent of the original center plate loading.

But, trucks are designed to certain loads. They originally weighed, exclusive of motors, 56,000 lb.; they will now weigh some 15,000 lb. more. The total loaded train weight will then have become:

Original loaded train weight.....	245,000 lb.
Increase due to low alloy steel.....	46,000 lb.
Increase required in structure.....	24,000 lb.
Increase in truck weight.....	15,000 lb.
 New loaded train weight.....	330,000 lb.
Total increase of weight.....	85,000 lb.

The increase naturally affects power requirement. The



An Example of Improper Use of Thin Material—A European Rail Car in Which Shear Lines in the Sides and Compression Buckles in the Letterboard Tell the Tale of Too Much Weight Reduction

Zephyr has 600 engine horsepower available for propulsion, or 400 lb. of loaded train per horsepower. Increased loading calls for additional power, and in the case of Diesel electric drive, this too adds about 90 lb. per horsepower. A bit of algebra shows the increase of horsepower required to be 300, with a corresponding additional increment of 27,000 lb. to the train load.

There happens to be available another engine having just the 900 horsepower now called for. The increased cost over that of the 600-horsepower unit originally used is \$31,000.

The stainless used in the Zephyr amounted to \$20,000. Had it been replaced by 116,000 lb. of an alloy steel, this would have cost \$5,800. The apparent saving of \$14,200 in basic material cost is, however, rather upset by the corresponding increase of \$31,000 for the power plant.

Nor is this the full story of what an apparently small weight increase can do to economies. The larger power plant adds, through fuel, oil and maintenance, 4 cents a mile to operating expense. This means about \$4,000 a year, or a 5 per cent return on \$80,000. Add to this the \$31,000 for increased power and subtract the saving incident to a cheaper material. The so-called cheaper train will then be found to have tied up an equivalent capital investment of \$96,800 more than had it been built of the more expensive metal in the first place.

Material Not the Principal Item of Cost

But, so strong is the impression created by the cost per pound of stainless steel, that one readily attributes to it the expense of these pioneering efforts. Actually, the stainless steel used in the structure of the Zephyr constituted but 8 per cent of the total cost. Engineering, appointments, good workmanship and the power plant, represent the really big items of expense. Any one of these might have been chiseled by more than was paid for the steel, had such been the desire of builder or customer.

Furthermore, in considering the substitution of cheaper alloys, one must not assume that the technique of application automatically cheapens in proportion to the base price of material. As a matter of fact, these newer alloys lack an established technique. It is proposed to assemble them by riveting and welding. Both arts have been highly developed for structures in heavy gages, but the assumption that they may be extended to efficient use with thinner and stronger metals is possibly as ambitious as is the adoption of thin closed sections for a corrodible material. Good welding is a test

of organization, rather than apparatus. Good welders command good wage. It appears then, unlikely that these new alloys will soon be able to avail themselves of the effective and cheap method of assembly required for light weight construction.

This has been done for stainless. The Budd Company's development extends back over a good many years. Starting with aircraft and railroad structures of extreme lightness, it has progressed to those of ruggedness. In all this time there has not been a single case of structural failure. The sections used have not only been designed to guard against failure, but they have been predicated upon the elimination of the element of personal skill in an assembly which requires uniform effectiveness.

No True Saving in Cheaper Steel

With, then, no true saving resulting from the mere substitution of a cheaper steel for a more expensive one, and with no promise of a cheaper technique of application, these alloys had better be returned to the field for which they were originally developed. With these steels, for instance, the reduction of a coach weight from say 130,000 to 100,000 lb. is quite legitimate. When they are offered, however, to reduce that weight down to as low as 60,000 lb., their utility has been overextended.

Freight cars again suggest further application. These roll only for a small percentage of their life. The rest of the time they are largely storehouses and subjected to all the local damage of loading and unloading. The metal in them is predicated in thickness and weight upon conditions having little relation to primary load stresses or dynamics of movement. Any improvement, therefore, over mild steel will justify itself in reduced cost of maintenance. In both cases the gages are substantial and the joining of material not critical. This condition would seem to define as well as to limit the use of these alloys. Their extension into true light weight construction is not feasible.

Consider Revenue as Well as Cost

Maybe these new trains are idealistic. Maybe they do cost more than some half-measure compromise. The fact, nevertheless, remains that they have demonstrated their economics, they have proven their worth, and, above all, they have aroused the public interest. The building of these first high-speed, streamlined trains has required courage, but it would seem to require courage of an even higher order to attempt to duplicate or approach their record by any project, the sole recommendation of which is the use of cheaper materials.

After all, if a lowered first cost is the chief aim, and if its attainment can be had only through sacrifice of performance, safety or appearance, the benefits on the one hand should be weighed against the shortcomings on the other, and both should be given values. For instance, the interest on the initial investment in the Zephyr figures at some 6½ cents a mile, or a little more than the revenue derived from three passengers at a two-cent tariff. The Zephyr has already exceeded an anticipated business increase to the point where a fourth car will be added. Furthermore, the earning capacity of this train promises a possible retirement of the entire first cost in about two years.

First cost would, therefore, not seem to be the determining factor. All important is earning capacity. If the price of this be a relatively expensive material, then that material is the wisest investment.

President Plans One Agency To Regulate All Transport

(Continued from page 51)

transportation codes are thus established should be under a centralized governmental administration, linked with the regulatory body."

Senate Committee on Interstate Commerce

In the Senate the proposed legislation will not be in particularly sympathetic hands from the railroad point of view, since Senator Wheeler, of Montana, has been elected chairman of the committee on interstate commerce, succeeding Senator C. C. Dill, who did not return to Congress. Senator Wheeler in his past service on the committee has always been hostile to the railroads and it has been reported that he is now having drafted a government ownership bill. However, it is believed that in the present circumstances the fact that the bill will be put forth as an administration measure will outweigh many other considerations. In the House the bill would come before the committee on interstate and foreign commerce, the chairman of which is Representative Sam Rayburn, of Texas, who in the last two sessions has sponsored the bills for regulation of motor vehicle transportation.

Assignments to the Senate committee on interstate commerce, including several new members, were approved on January 7 as follows: Burton K. Wheeler, Montana, chairman; E. D. Smith, South Carolina; Robert F. Wagner, New York; Alben W. Barkley, Kentucky; M. M. Neely, West Virginia; William H. Dietrich, Illinois; Augustine Lonergan, Connecticut; Fred H. Brown, New Hampshire; Huey P. Long, Louisiana; Homer T. Bone, Washington; A. V. Donahey, Ohio; Sherman Minton, Indiana; A. Harry Moore, New Jersey; Harry S. Truman, Missouri; James Couzens, Michigan; Jesse H. Metcalf, Rhode Island; Daniel O. Hastings, Delaware; Wallace H. White, Jr., Maine; James J. Davis, Pennsylvania; Henrik Shipstead, Minnesota.

Provision for another program of loans to railroads for maintenance and equipment may be included in the new public works program, which the President said would also include "non-federal projects," but new legislation will be required for the new program.

The Budget included no new appropriation for the Public Works Administration, although it included an estimate of \$15,000,000 for railroad loans in the fiscal year 1936, apparently referring to the unexpended part of the \$199,607,800 already allotted for the purpose. Any R. F. C. loans to railroads would also be in a separate bill, because the corporation's lending powers now expire on January 31, unless extended, as they are expected to be. The Budget estimate included \$29,300,000 for railroad loans by the R. F. C. in 1936 and \$50,000,000 for 1935, as compared with actual expenditures in 1934 of \$31,817,442.

Meanwhile the Railway Labor Executives' Association is laying plans for an active campaign for the legislation it desires and several of the bills which it had introduced at the last session, including the six-hour day, full-crew, and train limit bills, were re-introduced in the House and the Senate on the first days of the session. The subjects of most of these bills have been included in the study which has been made by Mr. Eastman's Labor Relations Section, a report of which is expected at an early date, and Mr. Eastman's views as to some of the principles involved are expected to be included in an address at a meeting called by the Railway Labor Executives' Association at Chicago on January 12.

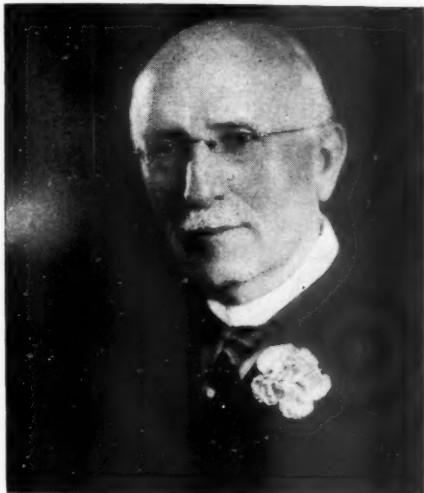
NEWS

Alba B. Johnson, Former R. B. A. President, Dies

Had also served, from 1911 to 1919,
as president of the Baldwin
Locomotive Works

Alba B. Johnson, who retired from the presidency of the Railway Business Association in April, 1932, after having held that position for 14 years, including the difficult post-war period, died of a heart ailment at his home in Rosemont, Pa., on January 8 after an illness of several months. Mr. Johnson was president of the Baldwin Locomotive Works from 1911 until 1919. He was in his seventy-seventh year.

Alba Boardman Johnson was born at Pittsburgh, Pa., on February 8, 1858, and was graduated from Central High School, Philadelphia, in 1876 with a B.A. degree.



Alba B. Johnson

Later he was awarded LL.D. degrees from Ursinus College (1909) and from the University of Vermont (1928). Mr. Johnson began his business career in 1877 as a junior clerk with Burnham, Parry, Williams & Co. (now Baldwin Locomotive Works) at Philadelphia. During 1878-1879 he was employed as a stenographer by the Edgemore Iron Works, Wilmington, Del., returning in 1879 to Burnham, Parry, Williams & Co. where he continued in stenographic positions until 1896. In the latter year Mr. Johnson became a partner in the firm and continued as such until 1909 when Burnham, Parry, Williams & Company was incorporated into the Baldwin Locomotive Works. With the incorporated company he was vice-president and treasurer during 1909-1911 and president from 1911 until his retirement in 1919.

Meanwhile, in 1918, Mr. Johnson had been elected president of the R.B.A., a position which he retained for 13 years after his retirement from the Baldwin presidency, or until April, 1932, when he was succeeded by Harry A. Wheeler.

A man of many interests Mr. Johnson had at various times during his career been president of Jefferson Medical College, Philadelphia, president of the Pennsylvania State Chamber of Commerce and a director of the Federal Reserve Bank.

R.F.C. Loans to Railroads

Up to December 31 the Reconstruction Finance Corporation had authorized loans to railroads amounting to \$457,856,080, of which \$447,283,272 had been disbursed, and \$70,727,837 had been repaid.

Club Meetings

The Canadian Railway Club will hold its thirty-second annual dinner at the Windsor Hotel, Montreal, on Saturday evening, February 2.

The next meeting of the Western Railway Club will be held on January 21, at which time Macy Nicholson, chairman of the National Railway Adjustment Board, will speak on Public Relations.

Low Fares on the Long Island

The Long Island's special round-trip tickets, 1-day, 30-day and other forms which were put in use at low rates on May 1, 1933, are to be continued on sale until April 30, 1935, or four months beyond the expiring date heretofore announced. These tickets are sold at rates 40 per cent, 20 per cent, and certain lower percentages, below the regular one-way fare.

New Alloy Steels and Their Application to Car Equipment

In the paper by G. N. Schramm, E. S. Taylerson and Albert F. Stuebing, presented at the Annual Meeting of the A.S.M.E., New York, December 4, 1934, and abstracted in the *Railway Age*, December 8, 1934, page 761, a statement was made that the authors believed the non-linear time-corrosion relationship of steel had not been pointed out previously. The attention of the authors has been directed to the fact that the non-linear time-corrosion relationship of steel was pointed out in an article by R. F. Passano, published in *Industrial and Engineering Chemistry*, November 1933, page 1247.

The tensile strength of Cor-Ten steel, shown in this Paper in Table III, physical properties, in plates, shapes and bars, should be 70,000 lb. per sq. in., minimum, instead of 65,000 lb.

Bills Affecting Railways Introduced in Congress

Consist mainly of reintroductions of bills previously put in but not acted upon

Bills affecting the railroads introduced in Congress during the first week of the session were mainly reintroductions of bills that had been put in before without being acted on. These included several on the program of the Railway Labor Executives' Association designed to increase the number of railroad employees and shorten their hours of work without reducing their earnings. The bill to limit the car length of trains was introduced by Senator Brown, of New Hampshire, as S. 27, and in the House by Representative Griswold, of Indiana, as H.R. 169. The six-hour day bill was introduced by Representative Crosser, of Ohio, as H.R. 2749. The full-crew bill was put in by Senator Neely, of West Virginia, as S. 59. A bill requiring additional inspection of signal apparatus was also introduced by Representative Crosser as H.R. 2748. One to amend the employers' liability act was introduced by Representative Mead, of New York, as H.R. 3054. Representative Pettengill, of Indiana, also introduced as H.R. 3263 his bill of last session to repeal the long-and-short-haul clause of Section 4 of the interstate commerce act.

Representative Bacon, of New York, has introduced his bill for the regulation of motor carriers. Representative Guyer, of Kansas, has introduced a bill to require the employment of American citizens on observation, club, and sleeping cars. Representative Snyder, of Pennsylvania, has a bill proposing the charging of tolls for passages through locks in canalized rivers. Senator Wheeler, of Montana, has a bill to prohibit the surcharge for Pullman passengers. Senator George, of Georgia, has reintroduced a series of resolutions calling for investigations by the Federal Trade Commission, the Interstate Commerce Commission, of the committee on interstate commerce of the activities of railroad freight associations and of differences in freight rate levels in different sections of the country.

Castle to Address Railroad Club

O. C. Castle, director, Section of Car Pooling, Federal Co-ordinator of Transportation, will speak at the meeting of the New York Railroad Club on Friday, January 18, on the proposed box car pool. The address will be followed by an open forum discussion.

Net for Eleven Months Totaled \$423,117,530

Return of 1.72 per cent compares with 1.77 per cent during like period of 1933

Class I railroads for the first eleven months of 1934 had a net railway operating income of \$423,117,530 which was at the annual rate of return of 1.72 per cent on their property investment, according to reports compiled by the Bureau of Railway Economics of the Association of American Railroads. In the first eleven months of 1933, their net railway operating income was \$436,485,963 or 1.77 per cent.

Operating revenues for eleven months totaled \$3,013,940,715, compared with \$2,

850,772 for the same period in 1933, an increase of 5.7 per cent. Operating expenses amounted to \$2,246,421,068, compared with \$2,062,437,196 for the same period in 1933, an increase of 8.9 per cent.

Class I railroads in the eleven months paid \$226,649,708 in taxes compared with \$238,371,895 for the same period in 1933, a decrease of 4.9 per cent. For November alone, the tax bill amounted to \$17,259,925, a decrease of \$217,796 or 1.2 per cent under November, 1933.

Thirty Class I railroads failed to earn expenses and taxes in the first eleven months of 1934, of which 9 were in the Eastern district, 6 in the Southern, and 15 in the Western.

Class I railroads for November had a net of \$31,582,703, at the rate of 1.47 per cent. In November, 1933, their net was \$37,662,122, or 1.74 per cent. Operating revenues for November amounted to \$256,967,180, compared with \$257,685,946 in November, 1933, a decrease of 0.3 per cent. Operating expenses in November, totalled \$197,871,881, compared with \$191,841,964 in the same month in 1933, an increase of 3.1 per cent.

Class I railroads in the Eastern district for eleven months had a net of \$248,539,940, at the rate of 2.18 per cent. For the same period in 1933, their net was \$261,656,604 or 2.28 per cent. Operating revenues in the Eastern district for eleven months totaled \$1,529,549,385, an increase of 4.9 per cent above the corresponding period in 1933, while operating expenses totalled \$1,107,717,783 an increase of 8.5 per cent. Railroads in the Eastern dis-

trict for November had a net of \$19,082,837, compared with \$21,120,314 in November, 1933. Class I railroads in the Southern district for eleven months had a net of \$47,953,481, at the rate of 1.62 per cent. For the same period in 1933, their net amounted to \$53,062,459, at the rate of 1.76 per cent. Operating revenues of railroads in the Southern district for eleven months amounted to \$374,390,994, an increase of 5 per cent above the same period in 1933, while operating expenses totalled \$290,095,352, an increase of 8.4 per cent. Railroads in the Southern district for November had a net of \$4,296,537, compared with \$4,131,320 in November, 1933.

Class I railroads in the Western district for eleven months had a net of \$126,624,109, at the rate of 1.24 per cent. For the same eleven months in 1933, they had a net of \$121,766,900, at the rate of 1.19 per

CLASS I RAILROADS—UNITED STATES

	1934 Month of November	1933	Per cent of Increase or Decrease
Total operating revenues	\$256,967,180	\$257,685,946	0.3 Dec.
Total operating expenses	197,871,881	191,841,964	3.1
Taxes	17,259,925	17,477,721	1.2 Dec.
Net railway operating income	31,582,703	37,662,122	16.1 Dec.
Operating ratio—per cent	77.00	74.45	
Rate of return on property investment.....	1.47%	1.74%	
<i>Eleven Months Ended November 30</i>			
Total operating revenues	\$3,013,940,715	\$2,850,273,772	5.7
Total operating expenses	2,246,421,068	2,062,437,196	8.9
Taxes	226,649,708	238,371,895	4.9 Dec.
Net railway operating income	423,117,530	436,485,963	3.1 Dec.
Operating ratio—per cent	74.53	72.36	
Rate of return on property investment.....	1.72%	1.77%	

cent. Operating revenues in the Western district for eleven months amounted to \$1,110,000,336, an increase of 7.2 per cent above the same period in 1933, while operating expenses totalled \$848,607,933 an increase of 9.7 per cent. For November alone, the railroads in the Western district reported a net of \$8,203,329, compared with \$12,410,488 in November, 1933.

C. M. St. P. & P. Establishes Mile-a-Minute Service

The Chicago, Milwaukee, St. Paul & Pacific, on January 3, placed five of its Chicago-Milwaukee trains, a morning and an afternoon train from Chicago and three morning trains from Milwaukee, on schedules of 85 min. for the 85 miles, thus reducing the fast time established last summer by five minutes.

Statistics of Waterways

The Bureau of Railway Economics of the Association of American Railroads has issued as Statistical Summary No. 17 a bulletin designed as a convenient reference for statistics of waterways and waterway operation in the United States, based upon official reports and records, the latest available up to December 1, 1934. The contents include tables on the length of navigable waterways; commerce on rivers, canals, and connecting channels; federal expenditures on rivers, canals, and connecting channels; statistics of carriers by water reporting to the Interstate Commerce Commission; statistics of New York Barge Canal; statistics of traffic on the Great Lakes; and statistics of the Panama Canal.

I. C. C.'s Power Reverse Gear Order Held Invalid

Supreme court bases decision on absence of showing that safe operation requires rule

Affirming the decree of the federal court for northern Ohio, the Supreme Court of the United States on January 7 rendered a decision holding invalid the order of the Interstate Commerce Commission of January 18, 1933, requiring the railroads to equip their locomotives with power reverse gear. The decision was based on the ground that the commission could make an order of the kind only in the interest of safety and that there was an absence of any real finding that safe operation requires the discontinuance of the manual reverse gear and the substitution of power reverse gear. The railroads are particularly interested in the bearing of this decision on the case pending before the commission in which the railroad brotherhoods have asked it to require the equipment of locomotives with automatic stokers.

At the date of the order there were in use in the United States about 31,597 steam locomotives equipped with hand reverse gear and 28,925 equipped with power reverse gear. Prior to the order, Rule 157, which prescribes the reverse gear on locomotives, left it optional with railroads to equip them with either hand operated or power operated reverse gear. The order amended that rule so as to require the railroads to equip "with a suitable type of power operated reverse gear" all steam locomotives built on or after April 1, 1933; and similarly to equip, "the first time they are given repairs defined by the United States Railroad Administration as Class 3, or heavier," all steam locomotives then in road service "which weigh on driving wheels 150,000 pounds or more," and all then used in switching service "which weigh on driving wheels 130,000 pounds or more." The order required that in any event, all such steam locomotives be so equipped before January 1, 1937; and that "air operated reverse gear (including thus power gear already installed) shall have a suitable steam connection" so arranged "that in case of air failure steam may be quickly used to operate the reverse gear."

The order of the commission was entered on a complaint of the Brotherhood of Locomotive Engineers and the Brotherhood of Locomotive Firemen and Engineers. The complaint alleged, in substance, that while power reverse gear is a suitable, safe and practical device, manually operated reverse gear is inherently unsafe and unsuitable in principle and design; that it subjects employees and the traveling public to unnecessary peril; and that the use of locomotives equipped with hand reverse gears violates the boiler inspection act.

Practically all the railroads of the United States were made respondents. They challenged in their answers the jurisdiction of the commission on the grounds that the procedure was unauthorized and that a power reverse gear was not a safety device or appliance within the meaning of the boiler inspection act; denied the essen-

tial allegations of the complaint; and, as additional reason for refusing its prayer, set up the impaired financial condition of the carriers. These issues were referred for hearing to an examiner. Fifty-five days were devoted to the taking of testimony. The witnesses numbered 337. Their testimony covered 6,491 pages. There were introduced, in addition, 109 exhibits, many of them voluminous. The proposed report of the examiner occupies 40 pages of the printed record in the court; and the railroads' exceptions to it, 60 pages. The exceptions were heard by a division of the Commission consisting of three members; and reargument before the whole commission was denied.

The suit to set aside the order was brought by Baltimore & Ohio Railroad and other carriers, suing on behalf of themselves and substantially all the other railroads. The original defendant was the United States. The commission, Grand Chief Johnson of the Brotherhood of Locomotive Engineers and President Robertson of the Brotherhood of Locomotive Firemen and Enginemen are defendants by intervention. The case was heard by the district court, three judges sitting, on a transcript of the record before the commission. The railroads again contended that the commission lacked authority to entertain the complaint. They insisted also that the order was void for lack of essential findings of fact. These objections were overruled, but the court set the order aside on the ground that the commission had acted arbitrarily, in failing to give consideration and legal effect to pertinent, uncontradicted facts having a controlling bearing upon the issues, and in disregarding undisputed evidence. An appeal to the Supreme court by all the defendants was allowed. The opinion by Justice Brandeis includes the following:

"The railroads contend that to support the order certain basic findings are essential; that these were not made; and that, hence, the order is void. This contention is in our opinion sound. The act does not confer upon the commission legislative authority to require the adoption on locomotives of such devices as, in its discretion, it may from time to time deem desirable. The operation of an engine, however equipped, involves some danger to life or limb. At common law the carriers were free to determine how their boilers should be kept in proper condition for use without unnecessary danger. *Baltimore & Ohio R. R. Co. v. Groeger*, 266 U.S. 521, 529. And the act conferred authority to prescribe by rule specific devices, or changes in the equipment, only where these are required to remove unnecessary peril to life or limb. The power to make the determination whether the proposed device or change is so required, vests in the commission. But its finding to that effect is essential to the existence of authority to promulgate the rule; and as Congress has made affirmative orders of the commission subject to judicial review, *The Chicago Junction Case*, 264 U.S. 258, 263-265, 5 the order may be set aside unless it appears that the basic finding was made. *Florida v. United States*, 282 U.S. 194.

"The primary question of fact presented

for determination was, as the report of the commission states, whether the use of locomotives equipped with hand reverse gear, as compared with power reverse gear, causes unnecessary peril to life or limb. The report discusses, at some length, the alleged advantages and disadvantages of the two classes of reverse gear and the expense which the proposed change would entail; and concludes with findings that, to a certain extent, the change should be made. But whether the use of any or all types of steam locomotives equipped with hand reverse gear as compared with power reverse gear causes unnecessary peril to life or limb, is left entirely to inference. This complete absence of 'the basic or essential findings required to support the commission's order' renders it void."

Railway Employment in December

The number of employees of Class I railroads as of the middle of the month of December, according to reports to the Interstate Commerce Commission, was 960,769, a decrease of .57 per cent as compared with the number in December, 1933, and a decrease of 1.88 per cent as compared with the number in November. This represents 53.8 per cent of the average for 1923-1925.

Disastrous Collision in Russia

Press dispatches of January 7 reported a rear collision of southbound passenger trains on the railroad from Leningrad to Moscow, at Torbine, 130 miles south of Leningrad, in which three cars were destroyed by fire and seven others were wrecked. The temperature at the time was 25 deg. below zero, and the track was not cleared for 13 hours. Latest estimates gave the number of persons killed as 23, and seriously injured, 56.

Three-Car U. P. Streamlined Train in Service January 31

The Union Pacific on January 31 will place its three-car streamlined train in regular service between Salina, Kan., and Kansas City, Mo., on a 3½-hr. schedule for the 187 miles. The train will leave Salina at 7 a. m. and will arrive at Kansas City at 10:30 a. m.; returning it will leave Kansas City at 4 p. m. and arrive at Salina at 7:30 p. m.

The six-car and two nine-car streamlined trains will be placed in service between Chicago and the Pacific Coast in May.

Railroad Credit Corporation Has Returned 28 Per Cent

The Railroad Credit Corporation, according to a report as to its financial condition filed with the Interstate Commerce Commission, has, through liquidating distributions since termination of its lending period on June 1, 1933, returned \$20,627,178 or 28 per cent of the net emergency freight revenues collected by it. Of this amount, \$9,097,729 has been in cash and \$11,529,449 in credits on obligations due the corporation. Of the 13 liquidating distributions made by The Railroad Credit Corporation, nine distributions amounting to \$13,201,185, or 18 per cent of the net fund, were made in the calendar year of

1934, the last one having been made on December 31 in the amount of \$735,993 or 1 per cent. Payments to the corporation in December consisted of \$284,208 in reduction of loans, \$105,052 for interest, \$3,592 dividends on investments, \$27,197 from a carrier now in receivership in settlement of a prior emergency revenue balance, and \$41 from miscellaneous sources, a total of \$420,090.

Florida Arrow Placed in Service

A telegraphic impulse, flashing over more than 1,000 miles of line from Tallahassee, Fla., to Chicago, signified the start of the "Florida Arrow" of the Pennsylvania when it left Chicago for the South on January 2 on a schedule of 27 hr. 10 min. to Jacksonville and 27 hr. northbound. Governor David D. Scholtz, at Tallahassee, pressed a button to flash an impulse over wires which caused the bell of the "Florida Arrow's" locomotive at Chicago to ring, to give the signal to start the first trip. For the inaugural ceremonies, in which civic leaders and officers of the Pennsylvania participated, the train gates at the Union station were decorated with fruit-laden branches of orange and grapefruit trees, Spanish moss and palms.

Appropriation of \$5,850,656 Proposed for I. C. C.

An appropriation of \$5,850,656 for the Interstate Commerce Commission for the fiscal year 1936 is recommended in the report of the House appropriations committee on the independent offices appropriation bill submitted to the House on January 9. This is the amount recommended in the Budget estimate and represents an increase of \$419,686 as compared with the amount appropriated for the present fiscal year, but the difference is mainly accounted for by the proposed restoration of the present 5 per cent reduction in salaries of government employees. The bill provides for \$2,796,465 for general administrative expenses, \$851,976 for regulating accounts, \$514,195 for safety inspection, \$39,682 for signal safety systems, \$482,238 for locomotive safety inspection, \$1,041,100 for valuation, and \$125,000 for printing and binding.

"Big Four" Union Leaders in Canada Oppose St. Lawrence Plan

Continued opposition to the St. Lawrence deep waterways project, approval of the Government's relief efforts and endorsement of a contributory Dominion unemployment insurance act, were features of the proposals submitted to Prime Minister R. B. Bennett of Canada and his associates in Ottawa last week by the joint legislative committee of the railway transportation brotherhoods.

After nearly two hours discussion with the Government heads the delegation left with assurances that their proposals would "be given consideration."

The railway unionists urged that the Senate's power to veto legislation be suspended in respect to a bill that has passed the Commons twice; and that the scope of federal authority be broadened to enable it to enact social legislation for the benefit

of the people as a whole and to regulate highway transport as a work "for the general advantage of Canada."

Other legislation requested would provide compensation for loss of property of employees forced to move because of the abandonment of railway division points, stations and mileage; require at least two men on all units of motive power and increase the Dominion treasury contribution to the grade crossing elimination fund from \$200,000 annually as at present, to \$500,000.

The St. Lawrence deep waterways scheme was considered untimely, adverse to the improvement of employment in both United States and Canada, unnecessary because of the existence of adequate transportation facilities sufficient for years to come, a source of increased taxation which would be borne by the very people it would throw out of employment, and destructive to the present railway system.

Small Increase in Carloading Expected

Freight car loadings in the first quarter of 1935 are expected to be about six-tenths of one per cent above actual loadings in the same quarter in 1934, according to estimates just compiled by the thirteen Shippers' Regional Advisory Boards. On the basis of these estimates, car loadings of the 29 principal commodities will be 4,528,744 cars in the first quarter of 1935, compared with 4,500,200 actual loadings for the same commodities in the corresponding period last year.

Six of the 13 Shippers' Regional Advisory Boards estimate an increase in the loadings for the first quarter of 1935 compared with the same period in 1934 while seven estimate a decrease. The tabulation below shows the total loading for each district for the first quarter of 1934, the estimated loadings for the first quarter of 1935, and the percentage of increase or decrease.

Shippers' Advisory Boards	Actual Loadings 1934	Estimated Loadings 1935	Per Cent Increase
Allegheny	706,750	741,439	4.9 Inc.
Pacific Coast	149,504	157,168	5.1 "
Pacific Northwest	118,760	128,088	7.9 "
Southeast	451,898	468,547	3.7 "
Southwest	284,922	290,132	1.8 "
Great Lakes	245,066	276,517	12.8 "
Atlantic States	591,962	573,040	3.2 Dec.
Central Western	191,720	175,243	8.6 "
New England	125,747	114,540	8.9 "
Northwest	142,967	122,456	14.3 "
Trans-Missouri-Kansas	249,655	245,599	1.6 "
Mid-West	660,670	659,678	0.2 "
Ohio Valley	580,579	576,297	0.7 "
Total	4,500,200	4,528,744	0.6 Increase

Of the 29 commodities covered in the forecast, it is estimated that 19 will show an increase, and 10 a decrease, in the first quarter in 1935.

The 19 for which an increase is estimated are: flour, meal and other mill products; citrus fruits; other fresh fruits; coal and coke; ore and concentrates; gravel, sand and stone; salt; lumber and forest products; sugar, syrup and molasses; iron and steel; machinery and boilers; cement; brick and clay products; lime and plaster; agricultural implements and vehicles other than automobiles; au-

tomobiles, trucks and parts; fertilizers, all kinds; paper, paper board and prepared roofing and chemicals and explosives.

Outlook for Railroad Purchases Depends on Future Transport Policy

The National Resources Board has made public a report of its Land Planning Committee, which, under a section devoted to "The Outlook for Industrial Conditions and Employment," includes the following regarding the outlook for railroad purchases:

"Railway traffic, owing to competition of other forms of transportation and changes in industrial production and technique, has been declining relative to physical volume of production for a number of years with a much sharper reduction after 1930. Part of this loss may therefore be expected to be recouped during the next few years, but, if so, it might be at the expense of employment in competing transportation. While the outlook for railroad purchases depends very much on the arrangements to be worked out by the governmental agencies and railway management, without a marked change in fundamental policy the program of maintenance and equipment purchases by railroads during the next three to five years will have to be held at a minimum unless traffic volumes prove larger than now seems probable. We must reckon with the possibility, therefore, that this industry will afford little support to general industrial activity, particularly steel and railway equipment, and will be an adverse influence in the financial situation.

"The real contribution of the railroads to business revival depends upon the program of maintenance and equipment purchases during the next few years. The present tendency in view of current low earnings is to hold these capital expenditures down to a minimum and to seek improved earnings through raising still further out of line the general level of freight rates. There are, however, possibilities for potent contribution to industrial revival in a broad program of re-equipment along modern lines. This new investment would be amply justified by the reduced costs of operation. To be really effective in restoring and maintaining general industrial activity, such a program would need to be of substantial proportions and would probably need government support of some sort. The promotion of re-employment through this means apparently awaits the enunciation of the general outlines of the future national policy with respect to the railroads and other forms of transportation."

No Present Solution to Canada's Rail Problem

Under present business conditions there is no solution of Canada's railway problem and no one has yet come forward with a solution, Minister of Railways R. J. Manion said in a speech in Brockville, Ontario, last week. Amalgamation of the Canadian National and Canadian Pacific, he said, was not a solution.

Dr. Manion defined the railway problem as the provision of money to meet the interest on the Canadian National debt over and above the amount of the railways' earnings. In 1934 the C. N. R.

earned little more than its operating expenses and the government had to provide a balance of interest to bondholders of some \$50,000,000 not including interest due the government of \$32,000,000.

Railway earnings, however, Dr. Manion said, are improving although they have a long way to go yet before reaching normal. With a real revival of business railway traffic would return to normal and an accurate picture of the situation could be obtained.

"There seems to be a fairly widespread opinion, particularly among business men," said Dr. Manion, "that, through amalgamation or unification of the Canadian National and Canadian Pacific, the Canadian National deficit can be wiped out. It is true that those who propose this policy claim that by it savings could be made estimated by different authorities from a low of \$15,000,000 per year to a top figure of possibly \$75,000,000. But those who have mentioned \$75,000,000 savings do not claim any such savings as possible this year, but only at some unknown year in the future, when railway traffic has rebounded to that of really prosperous times. Let that be clearly understood.

"May I say at once that after deep study of the subject and a great deal of discussion with good authorities (and keeping in mind that both great railway systems have in the past four years brought about immense economies of all kinds) my own view is that at the present time, under present business and railway traffic conditions, only a very small fraction—perhaps one-quarter—of the greater figure mentioned could be saved by amalgamation or unification.

"Then remember that whatever savings might be made would have to be divided between the Canadian Pacific and Canadian National, with probably the Canadian Pacific asking the greater share, because of its excellent earning record in the past.

"Therefore it is obvious that no one has made any proposal by which any worthwhile part of our deficit could be saved under present conditions."

Equipment and Supplies

LOCOMOTIVES

THE SOROCABANA RAILWAY has ordered four of the 4-10-2 type locomotives from the American Locomotive Company. These locomotives will be of meter gage and will have three cylinders; 18½ in. by 24 in. outside, 18½ by 22 in. inside, and 48 in. driving wheels. Dr. L. Orsini is traffic manager, Sao Paulo, Brazil.

MOTOR VEHICLES

THE BURLINGTON TRANSPORTATION COMPANY has ordered 10 modern streamlined motor coaches from the General Motors Corporation.

Supply Trade

New Officers of National Malleable & Steel Castings Company

Henry F. Pope, who was elected chairman of the board of the National Malleable & Steel Castings Company, has served as president of the company for the last 21 years. Mr. Pope entered the employ of the company



Henry F. Pope

leable & Steel Castings Company, Cleveland, Ohio, had served as president of the company for the last 21 years. Mr. Pope entered the employ of the company



Carl C. Gibbs

on July 1, 1884, and had completed 50 years of service at the time of his recent election as chairman of the board.

Carl C. Gibbs, who has been elected president of the National Malleable & Steel Castings Company, began his employment with the company in 1905, as a salesman at its Indianapolis (Ind.) plant. In 1919 he was made sales manager of the Cleveland plant and the following year returned to Indianapolis as manager of the plant at that place. For the last five years Mr. Gibbs has been located in the general office at Cleveland as assistant to the president.

The ParCar Corporation, will move its office from 230 Park avenue to 75 West street, New York.

The Vapor Car Heating Company, Inc., Chicago, on January 1, discontinued

its Boston, Mass., office; all matters in that district will hereafter be handled through the New York office.

The Sinclair Refining Company, Headley Asphalt division, New York, has appointed the Maloney Oil & Manufacturing Company, Scranton, Pa., exclusive railway sales agents in the eastern part of the United States for the sale and distribution of Headley asphalt emulsions.

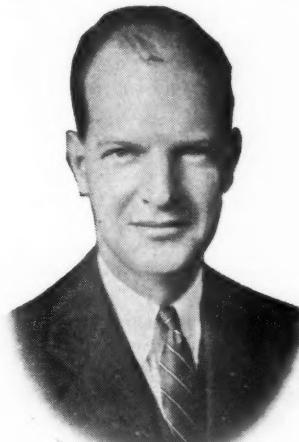
Col. E. A. Deeds of New York and Dayton, Ohio, was elected a director of The American Rolling Mill Company at a meeting of the board of directors held at the office of the company in Middletown, Ohio, on January 7, 1935. This fills the vacancy occurring through the death of James P. Orr of Cincinnati.

Lyle I. Martin, formerly connected with the Pettibone Mulliken Company, and more recently with the engineering department of the Chicago & North Western, has become associated with the Morden Frog & Crossing Works in the engineering, service and sales department, with headquarters at Chicago.

A. B. Jacobus, manager of general scale sales of Fairbanks, Morse & Co., with headquarters at Chicago, has been promoted to general manager of E. & T. Fairbanks & Co., with headquarters at St. Johnsbury, Vt., and has been succeeded by George C. Worthley, manager of the scale department in the New York branch.

Following the acquisition of the Pullman-Bradley Car Corporation, the Richmond Car Corporation, the Dickson Car Wheel Company and the New Orleans Car Wheel Company, Inc., by the Standard Steel Car Corporation, this company has been absorbed by the Pullman Car & Manufacturing Corporation and the latter's name changed to the Pullman-Standard Car Manufacturing Company.

Griswold Price, assistant manager of sales of the St. Louis district of the Illinois Steel Company, the Carnegie



Griswold Price

Steel Company, and the Tennessee Coal, Iron & Railroad Company, has been promoted to manager of sales for

these companies, with the same headquarters. He graduated from Northwestern University in 1919 and entered the employ of the Illinois Steel Company in July of that year. After spending one year at the Gary, Ind., and South Chicago plants of this company, he was employed in the Chicago district sales office and general sales department from July, 1920 to June 1, 1931. On the latter date he was appointed assistant manager of sales of the St. Louis district, which position he has held until his recent promotion.

OBITUARY

S. P. McGough, who retired as western sales agent of the Lorain Steel Company, with headquarters in Chicago, in 1932, died in that city on January 3, following a heart attack. He was born at Franklin, Pa., on February 26, 1874, and entered railway service in 1894 as a rodman for the Baltimore & Ohio. He became associated with the Lorain Steel Company in 1902, and in 1923 was appointed western sales agent, which position he held until his retirement. He was elected president of the National Railway Appliances Association in March, 1929, serving in that capacity for one year.

J. H. Larmouth, who had been manager of The Rail Joint Company of Canada, Ltd., Montreal, Canada, for a great many years, died on January 3, at the age of 63. Mr. Larmouth was graduated from McGill University in 1894 with the degree of bachelor of science and then for about a year was connected with the mechanical department of the Grand Trunk Railway. He subsequently served with a number of industrial companies and in charge of street railways. During the war he was connected with the Imperial Munitions Board as superintendent of the steel department. In 1922, he became interested in the railway supply business and represented a number of companies, later becoming president of Engineering Materials, Ltd.

Construction

LIVE OAK, PERRY & GULF.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the construction of an extension from Foley Junction, Fla., to Swan, 20 miles. Later an amendment to the application was filed stating that it is proposed to purchase from the Brooks-Scanlon Company a logging road of 10.75 miles from Foley Junction and to construct the remaining 10 miles to Swan.

SEABOARD AIR LINE.—The receivers have applied to the Interstate Commerce Commission for a certificate authorizing the construction of a branch line of 7½ miles from a point near Jacksonville, Fla., to Dames Point.

Financial

ATCHISON, TOPEKA & SANTA FE.—Abandonment.—The Interstate Commerce Commission has authorized this company to abandon that portion of a branch line extending from Elsinore, Calif., to Temecula, 16.5 miles.

NEW YORK, PENNSYLVANIA & OHIO.—Bonds.—The Nypano Railroad and the Erie have applied to the Interstate Commerce Commission for authority to extend for 15 years the maturity date of \$8,000,000 of New York, Pennsylvania & Ohio prior lien mortgage 4½ per cent bonds, which have already been extended to March 1, and to reduce the interest rate to 4 per cent. It is also proposed to pay \$1 for each bond.

ST. LOUIS-SAN FRANCISCO.—Abandonment.—The Interstate Commerce Commission has authorized this company and its trustees to abandon portions of the line formerly owned by the Kansas City, Clinton & Springfield extending from Stanley, Kans., southeasterly to Clinton, Mo., via Belton, and from Tracy Junction, Mo., to Phenix—an aggregate of 110.3 miles; reason, truck competition. The authority for abandonment is conditioned upon the willingness of the Frisco to sell the lines to local interests at salvage value and to permit them trackage rights to connect the two segments of the former K. C., C. & S.

ST. LOUIS-SAN FRANCISCO.—Receivership.—The federal district court at St. Louis has been asked by Special Master John P. Harding to rule on three points before the Master proceeds further in investigating the solvency of the railroad. These three points include a ruling by the court on the question of whether the proceedings are premature or reasonable, on the date to be employed in the determination of the question of solvency or insolvency and on the principles or standards of valuation to govern the inquiry. The Master has found it injudicious to proceed further with the inquiry asked by the Interstate Commerce Commission until a ruling on the three points has been made.

WABASH.—R.F.C. Loan.—The receivers have applied for a five-year extension of the loans from the Reconstruction Finance Corporation amounting to \$15,731,583 and also for an extension of the maturity date of a like amount of receivers' certificates pledged as collateral for the loans.

Average Prices of Stocks and of Bonds

	Jan. 8	Last week	Last year
Average price of 20 representative railway stocks..	36.83	36.09	39.10
Average price of 20 representative railway bonds..	76.56	75.86	69.58

Dividends Declared

Carolina, Clinchfield & Ohio.—\$1.00, quarterly; Stamped Certificates, \$1.25, quarterly, both payable January 21 to holders of record January 10.

St. Louis, Rocky Mountain & Pacific.—Common, \$2.25, quarterly; Preferred, \$1.25, quarterly, both payable January 21 to holders of record January 5.

Virginian.—Preferred, \$1.50, quarterly, payable February 1 to holders of record January 19.

Railway Officers

EXECUTIVE

N. Bassols has been elected chairman of the board of directors of the National Railways of Mexico, with headquarters at Mexico, D. F., succeeding **M. R. Gomez**.

FINANCIAL, LEGAL AND ACCOUNTING

Upon invitation of the Law Committee of the Association of American Railroads, **E. E. Fairweather**, head of the legal department of the Canadian National, has become a member of that committee.

W. R. Patterson, general auditor of the Canadian Pacific, with headquarters at Montreal, Que., has been promoted to deputy comptroller, with the same headquarters, succeeding **E. A. Leslie**, promoted. **C. E. Marchell**, chief of the joint facilities bureau, has been appointed general auditor, succeeding Mr. Patterson.

G. B. Perkins, assistant chief accounting officer of the St. Louis-San Francisco, with headquarters at St. Louis, Mo., has been promoted to chief accounting officer, succeeding **Edward H. Bunnell**, whose election as vice-president in charge of the Department of Finance, Accounting, Taxation and Valuation of the Association of American Railroads was noted in the *Railway Age* of December 8. **R. V. Hart** has been appointed assistant to the chief accounting officer, with headquarters at St. Louis, Mo.

OPERATING

C. H. Brown, assistant superintendent on the Saskatoon division of the Canadian National, with headquarters at Saskatoon, Sask., has been transferred to the Prince Albert division, with headquarters at North Battleford, Sask., succeeding **J. D. Healy**, who has been transferred to Prince Albert, Sask., on the same division, to replace **O. J. Rowe**, who has been transferred to Saskatoon to succeed Mr. Brown.

Glenn W. Curtis, trainmaster on the Western Pacific, with headquarters at Wendover, Utah, whose promotion to superintendent of the Eastern division, with headquarters at Elko, Nev., was noted in the *Railway Age* of December 1, was born on December 4, 1891, at Watsonville, Cal. He entered railway service with the Western Pacific on September 12, 1910, as an extra gang timekeeper, and served in this position and as roadmaster's and trainmaster's clerk, division engineer's clerk, secretary to general superintendent, secretary to the general manager and secretary to the president successively until August, 1920, when he was appointed trainmaster of Subdivisions 3 and 4 of the Eastern division, at Wendover. During the next 14 years Mr. Curtis served as train-

master at various points, being located at Wendover at the time of his recent promotion to superintendent.

G. H. Baillie, assistant to the assistant general manager of the Canadian Pacific, with headquarters at Vancouver, B. C., has been appointed assistant superintendent of the Lethbridge division, with headquarters at Lethbridge, Alta., succeeding **E. McCracken**. Mr. McCracken has been transferred to the Vancouver division, with headquarters at North Bend, B. C., where he replaces **W. J. McLean**, whose promotion to superintendent was noted in the *Railway Age* of December 15, 1934. **F. M. Rutter**, assistant district engineer of the British Columbia district, at Vancouver, has been appointed assistant to the assistant general manager, with the same headquarters, succeeding Mr. Butler. Mr. Rutter will continue to discharge the duties of assistant district engineer.

TRAFFIC

J. Macfarlane has been appointed general agent, passenger department, of the Canadian Pacific with headquarters at Victoria, B. C., succeeding **L. D. Chetham**, who has retired.

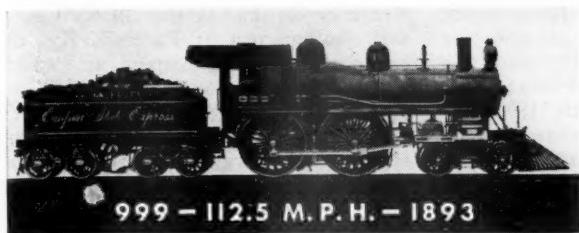
Eugene N. Crowson, city freight agent for the Illinois Central at St. Louis, Mo., has been appointed foreign freight agent, with the same headquarters, to succeed **Charles C. Cameron, Jr.**, deceased.

S. E. Corbin, general agent, passenger department, for the Canadian Pacific, at Atlanta, Ga., has been transferred to Cincinnati, Ohio, succeeding **K. A. Cook**, who has been transferred to the steamship passenger department at Chicago.

P. S. Smith, has been appointed acting general agent for the Union Pacific System, with headquarters at Atlanta, Ga., pending the return of **W. C. Elgin**, who is on an extended leave of absence because of ill health.

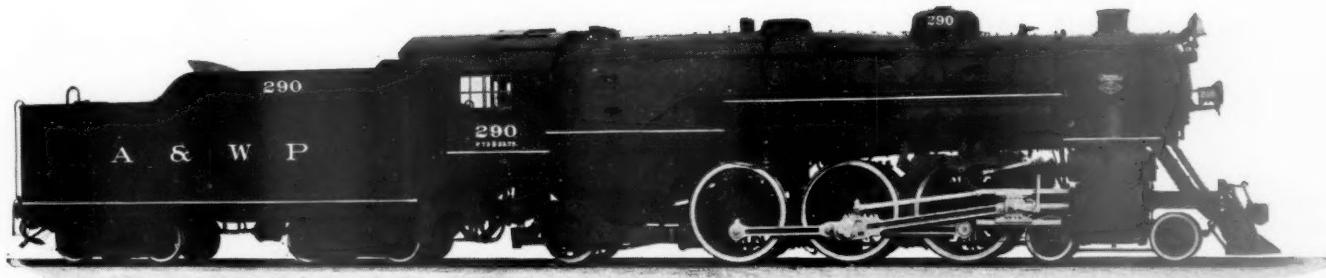
H. R. Sampson, manager of the travel bureau of the Chicago & Eastern Illinois, at Chicago, has been appointed general agent, passenger department, with the same headquarters, succeeding **W. E. Callender**, whose appointment as assistant passenger traffic manager was noted in the *Railway Age* of December 29, 1934.

E. C. Bywater, general agent of the Chicago Great Western at Cincinnati, Ohio, has been appointed assistant general freight agent at Kansas City, Mo., succeeding **C. R. Gregg**, who has been transferred to Chicago. **F. P. Wagner**, assistant general agent at Chicago, has been promoted to general agent at Cincinnati replacing Mr. Bywater. **R. M. Houston**, traffic agent at Dallas, Tex., has been appointed general agent at Houston, Tex., succeeding **J. H. Cummings**, who has been transferred to Omaha, Neb., to replace **H. T. Minkler**, assistant general agent, who has been appointed general agent at Dubuque, Iowa, succeeding **W. L. Seeley**, who has been appointed as



SPEED

HAS NEVER BEEN A LIMITATION OF
THE STEAM LOCOMOTIVE



Super-Power Steam locomotives provide speed and hauling capacity combined with flexibility of train operation, safety and low cost.

Without introducing a single unproven element Super-Power locomotives are available to give you exactly the performance you want, in any class of service.

Even the old 999, many years ago, demonstrated its ability to haul its train faster than the speed desired.



LIMA LOCOMOTIVE WORKS, INCORPORATED, LIMA, OHIO

sistant general agent at St. Paul, Minn. **C. G. Stewart**, traffic agent at Kansas City, Mo., has been appointed general agent at Waterloo, Iowa, succeeding **A. J. Howard**. **G. H. Shields**, traffic agent at Kansas City, has been appointed general agent with the same headquarters. **C. A. Howe**, assistant general agent at Los Angeles, Cal., has been appointed general agent with the same headquarters, succeeding **C. J. Chisam**, who has been appointed special representative with the same headquarters.

John K. Dent, assistant general freight agent on the Louisville & Nashville, with headquarters at Louisville, Ky., has been appointed assistant to the vice-president in charge of traffic, with the same headquarters, to succeed **Joseph G. Kerr**, who has resigned to accept a position with the Association of American Railroads. **Edward J. Cottom**, chief clerk in the general freight department, has been promoted to assistant general freight agent at Louisville, to succeed Mr. Dent. **G. A. Van Gieson**, commercial agent at New York, has been promoted to general agent at St. Louis, Mo., succeeding **W. L. Evans**, deceased.

ENGINEERING AND SIGNALING

Following the consolidation of the Kansas and St. Louis divisions of the Chicago, Rock Island & Pacific, to form the Kansas-St. Louis division, **C. C. Cunningham**, division engineer of the Kansas division, has had his jurisdiction extended to include the St. Louis division, and his headquarters have been moved from Herington, Kan., to Kansas City, Mo. **F. Nugent**, trainmaster at Manley, Iowa, has been appointed division engineer of the Cedar Rapids-Dakota division with headquarters at Cedar Rapids, Iowa, succeeding **W. E. Heimerdinger**, who has been assigned to other duties.

MECHANICAL

W. Walker, acting superintendent of motive power and car equipment on the Canadian National, with headquarters at Edmonton, Alta., has been appointed superintendent of motive power and car equipment at that point.

PURCHASES AND STORES

T. A. Stinson, storekeeper of the Green Bay & Western, with headquarters at Green Bay, Wis., has had his title changed to general storekeeper.

OBITUARY

R. Fitzgerald, who retired 13 years ago as president of the Chicago Junction, died on January 6 of pneumonia at Los Angeles, Cal.

Joseph F. Keany, general solicitor of the Long Island, died on January 7 of heart trouble at his home in Brooklyn, N. Y. Mr. Keany was born in Brooklyn

on April 9, 1867, and was associated with the law department of the Long Island for 40 years. He became a clerk in the legal department in July, 1894, and was promoted to the positions of chief clerk and junior attorney in March, 1896. In January, 1904, Mr. Keany became head of the law department with the title of attorney and was appointed general solicitor in July, 1916.

B. M. McDonald, division engineer of the Buffalo division of the New York Central, with headquarters at Buffalo, N. Y., died in that city on December 31, 1934.

E. B. Blair, who retired in 1933 as eastern traffic manager of the Mobile & Ohio, with headquarters at New York, died on December 11 at his home at Humboldt, Tenn.

W. H. Guild, assistant superintendent on the Oregon-Washington Railroad & Navigation Co., with headquarters at Walla Walla, Wash., died on January 5 as the result of injuries sustained in a fall.

E. J. Tice, assistant superintendent of transportation of the Norfolk & Western, with headquarters at Roanoke, Va., was shot to death on January 3 in his office by a clerk in the department.

John M. Doyle, general agent on the Great Northern at Spokane, Wash., and formerly division superintendent with the same headquarters, died on January 6 of a heart attack.

Charles Lapham, assistant engineer on the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Milwaukee, Wis., and formerly district engineer at the same point, died suddenly on January 8. Mr. Lapham had been connected with the Milwaukee continuously for more than 55 years. He was born on February 10, 1857, and received his engineering education at the University of Wisconsin. He entered the service of the Milwaukee in 1879 as a rodman and was advanced through various positions in the engineering department to that of district engineer at Milwaukee in 1910. In 1919 Mr. Lapham was assigned to special duties and given the title of assistant engineer, which he held until his death.

William M. Rhett, who retired two years ago as general foreign agent of the Illinois Central, died on January 6 at St. Luke's hospital, Chicago, following an operation. Mr. Rhett was born in South Carolina and entered the service of the Illinois Central in 1888. In 1905 he was appointed general freight agent in charge of foreign traffic at Chicago, and in 1918 he was made assistant to the freight traffic manager. During the World War he served with the United States Railroad Administration, and when the railroads were returned to private control in 1920 he was made general foreign agent of the Illinois Central, holding this position until his retirement. At the time of his death, he was vice-chairman of the Southern Ports Foreign Freight committee.

Thomas E. Hill, superintendent of the Kentucky division of the Illinois Central, with headquarters at Paducah, Ky., died on January 7 in a hospital at Paducah, following a heart attack. Mr. Hill was born on March 6, 1871, at Lynchburg, Va., and attended Virginia Military Institute. He entered railway service in 1897 as a track apprentice on the Illinois Central, later serving as a chainman and then as a rodman in the engineering department. In 1899, Mr. Hill was advanced to assistant engineer and four years later he was further promoted to roadmaster of the Tennessee division, being transferred to the Louisiana division in 1906. In June, 1907, he was promoted to superintendent of the same division, being transferred to the Kentucky division in November, 1915.

Charles Henry Stein, assistant to the president of the Central of New Jersey, with headquarters at New York, died on January 3 at Muhlenberg Hospital, Plainfield, N. J., after a short illness. Mr. Stein was born in Baltimore, Md., on July 23, 1871, and was graduated from Baltimore City College in June, 1889. He entered railroad service in 1889, with the Western Maryland, as an instrument man and assistant engineer. Mr. Stein served as assistant roadmaster of the Western Maryland from 1893 to 1903 and from the

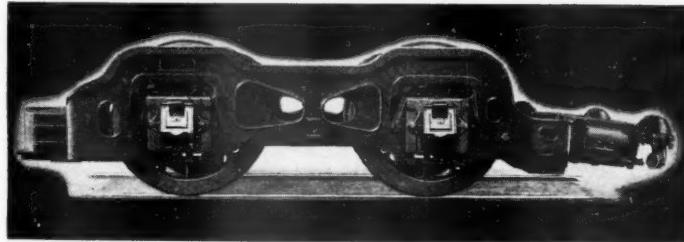


Blank & Stoller

C. H. Stein

latter date until 1907 he was, successively, assistant supervisor and supervisor for the Philadelphia & Reading (now Reading). In 1907 Mr. Stein was appointed engineer maintenance of way for the Central of New Jersey, and in 1914 he became superintendent. He became assistant to the general manager for the Philadelphia & Reading and the Central of New Jersey in 1918 and in 1920 he was appointed assistant to the president of the Central of New Jersey. From 1922 until 1926 he was general manager of the Central of New Jersey, being appointed assistant to senior vice-president on the latter date. He was appointed assistant to the president in 1926. Mr. Stein was a member of the New York Railroad Club, the American Society of Civil Engineers, the Society of Terminal Engineers, the American Association of Railroad Superintendents and the American Railway Engineering Association.

THE
BOOSTER



Booster Repair Parts made by the jigs and fixtures that produced the original are your best guarantee of satisfactory performance

**IS ESSENTIAL
WITH
AIR CONDITIONED
EQUIPMENT**

Luxurious passenger train equipment, which you have always had, will now be made even more comfortable with air conditioning.

Regardless of the operating means of the air conditioning equipment the increased power needed makes The Locomotive Booster essential to assure satisfactory locomotive performance.

The Booster is again a modern requirement. It not only meets the demand for higher speed by providing quicker acceleration to road speeds, whether out of stations or on grades, but it safeguards the comfort of the passengers by avoiding jars and shocks in starting.

In any budget for air conditioning include The Locomotive Booster as a necessary factor.



FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK

CHICAGO

MONTREAL



RAILWAY AGE

January 12, 1935

Revenues and Expenses of Railways

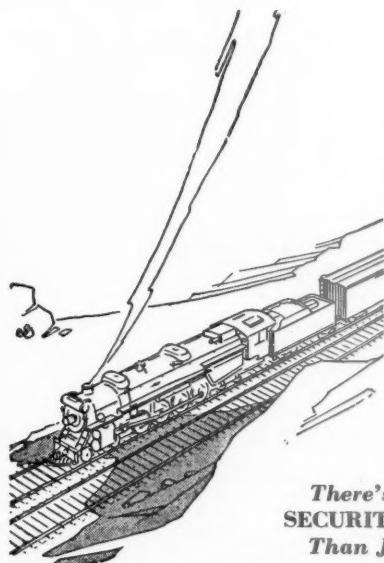
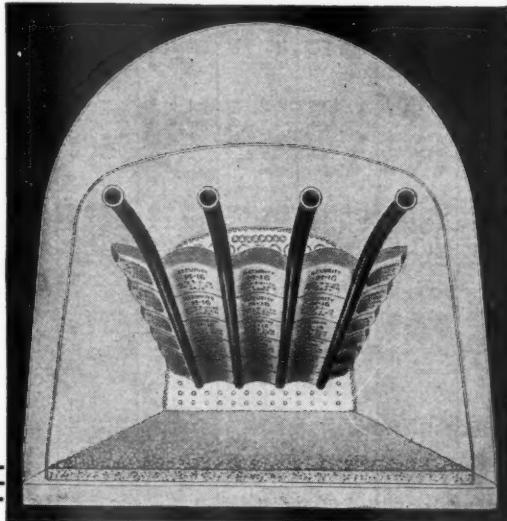
Month of November and Eleven Months of Calendar Year 1934

Month of November	Operating expenses		Operating income	Net from railway operation	Net railway operating income
	Maintenance of equipment	Transportation			
Av. mileage operated during period	Operating revenues—Total	Traffic	General	Total	Operating ratio
Freight	Passenger (inc. misc.)	\$7,925	\$93,059	\$5,160	\$25,477
120,259	128,219	\$42,420	\$10,438	\$5,160	\$25,227
1,478,067	1,572,139	\$48,382	96,012	5,160	\$25,000
165,950	143,001	410,280	1,052,512	6,635	82,812
949	1,948,590	37,558	1,079,221	1,581,4	1,501,148
1,569,623	1,908,547	439,819	4,695,878	8,343	211,555
11 mos.	12,105,304	1,822,665	439,819	2,613,493	2,613,493
11 mos.	11 mos.	458,232	458,232	9,491,811	9,491,811
Alton	11 mos.	12,199,987	1,088,891	84.6	1,335,739
9,517	10,556,085	12,199,987	3,400,758	12,671,600	13,287,130
80,135,316	99,078,900	24,239,929	407,988	12,671,600	11,831,689
9,537	10,566,085	12,198,829	4,277,823	12,671,600	11,831,689
855,630	60,366,196	2,387,755	4,277,823	12,671,600	11,831,689
9,688,714	543,538	2,099,319	4,277,823	12,671,600	11,831,689
11 mos.	11 mos.	11 mos.	11 mos.	11 mos.	11 mos.
Akron, Canton & Youngstown	Nov.	11 mos.	11 mos.	11 mos.	11 mos.
11 mos.	11 mos.	11 mos.	11 mos.	11 mos.	11 mos.
11 mos.	11 mos.	11 mos.	11 mos.	11 mos.	11 mos.
Panhandle & Santa Fe	Nov.	11 mos.	11 mos.	11 mos.	11 mos.
Atlanta, Topeka & Santa Fe	Nov.	11 mos.	11 mos.	11 mos.	11 mos.
Gulf, Colorado & Santa Fe	Nov.	11 mos.	11 mos.	11 mos.	11 mos.
Atlanta & West Point	Nov.	11 mos.	11 mos.	11 mos.	11 mos.
Western of Alabama	Nov.	11 mos.	11 mos.	11 mos.	11 mos.
Atlanta, Birmingham & Coast	Nov.	11 mos.	11 mos.	11 mos.	11 mos.
Atlantic Coast Line	Nov.	11 mos.	11 mos.	11 mos.	11 mos.
Charleston & Western Carolina	Nov.	11 mos.	11 mos.	11 mos.	11 mos.
Baltimore & Ohio	Nov.	11 mos.	11 mos.	11 mos.	11 mos.
Staten Island Rapid Transit	Nov.	11 mos.	11 mos.	11 mos.	11 mos.
Bangor & Aroostook	Nov.	11 mos.	11 mos.	11 mos.	11 mos.
Bessener & Lake Erie	Nov.	11 mos.	11 mos.	11 mos.	11 mos.
Boston & Maine	Nov.	11 mos.	11 mos.	11 mos.	11 mos.
Brooklyn Eastern District Terminal	Nov.	11 mos.	11 mos.	11 mos.	11 mos.
Burlington-Rock Island	Nov.	11 mos.	11 mos.	11 mos.	11 mos.
Cambria & Indiana	Nov.	11 mos.	11 mos.	11 mos.	11 mos.
Canadian Pacific Lines in Maine	Nov.	11 mos.	11 mos.	11 mos.	11 mos.
Central New Jersey	Nov.	11 mos.	11 mos.	11 mos.	11 mos.
Central Vermont	Nov.	11 mos.	11 mos.	11 mos.	11 mos.
Chesapeake & Ohio	Nov.	11 mos.	11 mos.	11 mos.	11 mos.
Chicago & Eastern Illinois	Nov.	11 mos.	11 mos.	11 mos.	11 mos.
Chicago & Illinois Midland	Nov.	11 mos.	11 mos.	11 mos.	11 mos.
Chicago Great Western	Nov.	11 mos.	11 mos.	11 mos.	11 mos.
Chicago, Indianapolis & Louisville	Nov.	11 mos.	11 mos.	11 mos.	11 mos.

Continued on next left-hand page

Chicago, Burlington & Quincy
Chicago
Chicago Great Western
Chicago, Indianapolis & Louisville
Chicago

FOR TWENTY-FIVE CONTINUOUS YEARS!



*There's More to
SECURITY ARCHES
Than Just Brick*

Since the introduction of the Sectional Security Brick Arch by the American Arch Company in 1910 it has rendered dependable economical service year after year.

For over a quarter of a century, during the period of the steam locomotive's greatest development, American Arch Company engineers have studied locomotive combustion and its relation to Arch Brick.

Brick Arch Designs have been improved and developed to further improve the economy and efficiency of modern power. Arch Brick shapes and sizes have been standardized. The service of supply has been perfected.

In this work the American Arch Company has had the close co-operation of the country's leading sources of refractory brick.

**HARBISON-WALKER
REFRACTORIES CO.**
Refractory Specialists



**AMERICAN ARCH CO.
INCORPORATED**
*Locomotive Combustion
Specialists * * **

Revenues and Expenses of Railways

MONTHS OF NOVEMBER AND DECEMBER—CONTINUED

Av. mileage operated during period	Operating revenues—Total		Operating expenses—Total		Operating ratio	Net from railway operation	Operating income	Net railway operating income, 1933
	Maintenance of Way and structures	(inc. misc.)	Traffic	Transportation				
Name of road								
Chicago, Mil., St. Paul & Pacific Nov.	\$384,379	\$6,950,205	\$27,813,535	\$5,639,271	81.1	\$1,310,934	\$8,338,333	\$644,297
Chicago, Mil., St. Paul & Pacific Nov.	11,176	68,052,539	1,279,904	1,104,044	85.5	17,040,855	6,232,339	8,317,452
Chicago, Mil., St. Paul & Pacific Nov.	11,173	68,052,539	12,006,781	6,110,044	85.5	1,067,654	2,303,097	8,26,816
Chicago, Rock Island & Pacific Nov.	11,576	3,784,565	9,280,025	2,44,873	84.8	9,39,010	4,933,743	30,143
Chicago, Rock Island & Pacific Nov.	7,598	4,116,955	13,432,916	49,679,623				68,435
Chicago, Rock Island & Gulf Nov.	280,537	22,889	41,464	3,466,039	58.105	40,916	-6,245	277,904
Chicago, Rock Island & Gulf Nov.	721	3,076,569	12,006,781	1,279,904	79.0	7,97,373	-2,533	1,461,529
Chi., St. Paul, Minn. & Omaha Nov.	1,654	11,377,022	1,223,452	1,983,36	23,847,736	41,655	-107,433	67,739
Clinchfield Railroad Nov.	309	406,633	22,889	1,127,000	349,260	2,208,224	1,47,490	1,461,529
Colorado & Southern Nov.	1,019	4,602,473	288,833	5,165,023	349,260	2,208,224	1,47,490	1,461,529
Columbus & Greenville Nov.	804	4,201,904	29,432	5,237,036	1,127,000	349,260	2,208,224	1,47,490
Delaware & Hudson Nov.	167	67,422	29,432	5,237,036	1,127,000	349,260	2,208,224	1,47,490
Delaware, Lackawanna & Western Nov.	167	5,122,731	41,022,205	3,522,901	1,127,000	349,260	2,208,224	1,47,490
Ft. Worth & Denver City Nov.	2,636	1,574,328	65,969	1,689,812	253,028	3,988,519	1,127,000	1,47,490
Denver & Rio Grande Western Nov.	2,553	15,458,111	31,537	17,641,395	2,167,325	2,24,804	17,067	1,47,490
Denver & Salt Lake Nov.	232	1,289,057	2,671	59,357	67,450	50,044	1,127,000	1,47,490
Detroit & Mackinac Nov.	50	2,652,625	228,205	2,867	5,227,700	49,502	1,127,000	1,47,490
Detroit & Toledo Shore Line Nov.	472	5,106,067	2,872	1,06,931	1,00,221	1,371,455	75,042	1,47,490
Detroit, Toledo & Ironton Nov.	560	7,79,664	33,907	9,402,221	2,303,728	34,249	2,08,74	1,47,490
Duluth, Missabe & Northern Nov.	562	8,09,520	52,005	2,671	1,06,017	5,657,525	9,902	1,47,490
Duluth, Winnipeg & Pacific Nov.	178	764,398	198	549,180	491,405	1,22,926	5,657,525	1,47,490
Duluth, Winnipeg & Pacific Nov.	446	6,947,422	39	9,465,156	1,001,367	5,657,525	1,22,926	1,47,490
Elgin, Joliet & Eastern Nov.	329	8,152,361	228,442	2,867	1,06,931	1,00,221	1,371,455	75,042
Erie Railroad Nov.	2,304	4,742,884	373,402	5,572,447	6,331,902	14,044,499	1,14,147	1,47,490
New Jersey & New York Nov.	2,311	59,284,121	4,795,419	69,474,735	6,470,1	21,992	263,371	13,603
N. Y., Susquehanna & Western Nov.	45	170,825	570,125	48,021	761,741	78,601	4,284	1,47,490
Florida East Coast Nov.	457	14,002	26,958	823,261	217,555	184,192	13,710	1,47,490
Georgia & Florida Nov.	249	2,551,606	22,442	28,581	623,285	1,128,125	1,128,125	1,47,490
Grand Trunk Western Nov.	329	3,703,038	129,747	6,922,777	1,230,999	1,438,125	2,22,870	1,47,490
Georgia R. R. . . . Nov.	329	4,428,165	1,592,477	6,922,777	1,230,999	1,438,125	2,22,870	1,47,490
Great Northern Nov.	822	8,345	570,125	48,021	761,741	78,601	4,284	1,47,490
Georgia & Florida Nov.	233	99,611	1,010	54,723	156,710	1,102,957	1,102,957	1,47,490
Georgia & Florida Nov.	233	982,776	11,391,643	740,852	621,723	1,102,957	1,102,957	1,47,490
Georgia & Florida Nov.	233	10,535	11,354	621,723	1,102,957	1,102,957	1,102,957	1,47,490
Fort Smith & Western Nov.	249	570,135	228,832	152,299	624,998	288,854	593,203	1,47,490
Georgia R. R. . . . Nov.	329	2,519,693	5,107,899	3,793,234	7,951,165	11,039,511	1,780,139	2,208,224
Canadian Nat'l Lines in New Eng. . . . Nov.	8,328	5,107,899	2,400	957,206	180,157	3,327,666	3,327,666	1,47,490
Great Northern Nov.	8,345	56,288,248	1,592,477	6,922,777	1,230,999	1,438,125	2,22,870	1,47,490
Green Bay & Western Nov.	233	99,611	1,010	54,723	156,710	1,102,957	1,102,957	1,47,490
Green Bay & Western Nov.	233	982,776	13,916,043	740,852	621,723	1,102,957	1,102,957	1,47,490
Green Bay & Western Nov.	233	10,535	11,354	621,723	1,102,957	1,102,957	1,102,957	1,47,490
Gulf & Ship Island Nov.	835,389	8,328	5,107,899	2,400	957,206	180,157	3,327,666	3,327,666

Continued on next left-hand page

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

513,707

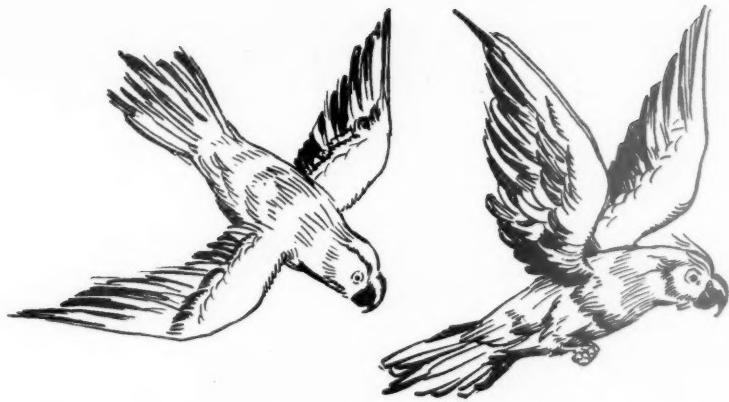
513,707

513,707

513,707

513,707

513,707



PARROTS - *led Columbus astray*



The ancient seaman's belief that birds are good-luck guides, led Columbus to follow a flock of parrots. And so he missed the mainland . . . yes, he discovered only *the fringe of America*.



In nearly every line of endeavor there are parrot-like beckonings to forsake tried and true procedure in achieving objectives, leading, if followed, to fringe results.

When Elesco superheater units become unserviceable after many years of severe duty, the logical procedure is to have them rehabilitated by Elesco . . . if full (rather than fringe) results are desired.

Elesco originally manufactured your superheater units. Elesco restores them — by REmanufacturing them — at a saving to you, compared to the purchase of new units, yet with the assurance of full-efficiency performance.

Elesco REmanufactured superheater units are practically equivalent in every way to new units.



THE SUPERHEATER COMPANY

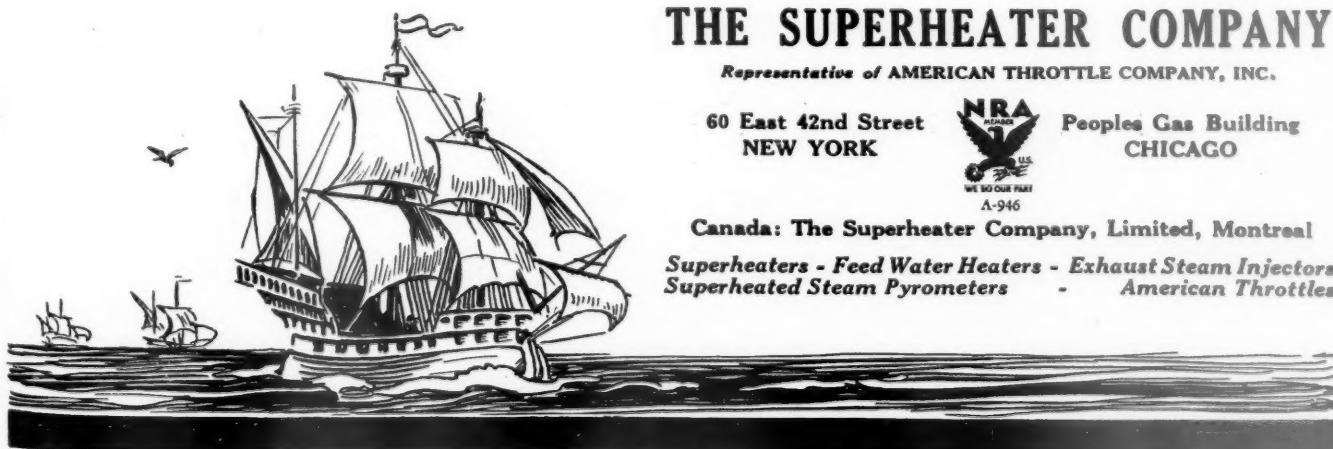
Representative of AMERICAN THROTTLE COMPANY, INC.

60 East 42nd Street
NEW YORK



Peoples Gas Building
CHICAGO

Canada: The Superheater Company, Limited, Montreal
Superheaters - Feed Water Heaters - Exhaust Steam Injectors
Superheated Steam Pyrometers - American Throttles



January 12, 1935

Revenues and Expenses of Railways

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1934—CONTINUED

Name of road	Av. mileage operated during period	Operating revenues—		Operating expenses—			Operating ratio	Net from railway operation	Net railway operating income
		Freight	Pasenger (inc. misc.)	Maintenance of Way and structures	Traffic	Trans- portation			
Gulf, Mobile & Northern..... Nov. 961	\$404,600	\$22,131	\$1,479,308	\$61,050	\$31,559	\$133,074	\$30,494	\$31,382	\$50,224
Illinois Central	Nov. 973	5,230,253	4,800,940	62,785	1,479,384	51,170	1,451,988	54,668,826	\$50,440
Yazoo & Mississippi Valley..... Nov. 960	11 mos.	6,250,065	5,776,565	6,322,674	1,454,442	1,900,893	1,451,026	4,960,540	45,750
Illinois Central	Nov. 973	5,230,253	4,800,940	6,322,674	1,454,442	1,900,893	1,451,018	4,960,540	45,750
Kansas City Southern	Nov. 982	6,277,065	13,036	8,289,499	17,172,317	79,660	17,22,928	435,107	50,541
Kansas, Oklahoma & Gulf..... Nov. 960	11 mos.	6,250,065	5,776,565	6,322,674	1,454,442	1,900,893	1,451,018	4,960,540	45,750
Lake Superior & Ishpeming..... Nov. 982	11 mos.	6,277,065	13,036	8,289,499	17,172,317	79,660	17,22,928	435,107	50,541
Lehigh & Hudson River..... Nov. 96	11 mos.	1,294,826	409	1,744,319	27,927	16,999	14,080	21,582	68,30
Lehigh & New England..... Nov. 96	11 mos.	1,294,826	4193	1,728,609	16,999	16,999	14,080	21,582	68,30
Lehigh Valley	Nov. 968	17,057	1,621,614	761,952	1,621,614	1,621,614	1,621,614	1,621,614	1,621,614
Louisiana & Arkansas..... Nov. 968	331,045	97,559	4,084,918	115,634	12,024	17,147	3,331	39,049	7,632
Maine Central	Nov. 1,046	1,292,004	2,005	1,385,542	16,999	16,999	16,999	16,999	16,999
Midland Valley	Nov. 363	115,232	302	247,365	35,025	25,258	21,870	20,077	20,077
Minneapolis & St. Louis..... Nov. 1,631	1,545,908	4,323	1,927,787	195,915	105,401	1,426,684	128,971	78,020	1,426,684
Minn., St. Paul & S. S. Marie..... Nov. 4,297	18,027,989	1,003,154	1,747,267	105,070	143,311	1,204,945	16,141,928	2,486,811	1,204,945
Duluth, South Shore & Atlantic..... Nov. 163	29,250	1,283	2,027,853	15,345	1,032,090	110,785	22,220	28,494,288	1,032,090
Spokane International	Nov. 163	399,586	4,778,481	15,345	1,032,090	110,785	22,220	28,494,288	1,032,090
Mississippi Central..... Nov. 150	547,649	19,914	49,352	15,345	1,032,090	110,785	22,220	28,494,288	1,032,090
Missouri-Kansas-Texas Lines..... Nov. 364	626,617	19,432	52,601	15,345	1,032,090	110,785	22,220	28,494,288	1,032,090
Missouri Pacific	Nov. 364	774,011	14,426	863,632	10,500	10,500	10,500	10,500	10,500
Gulf Coast Lines..... Nov. 1,763	643,638	16,934	470,853	16,934	15,451	11,254	2,582	29,145	49,699
International-Great Northern..... Nov. 1,154	9,294,192	55,028	961,866	7,229	7,229	7,229	7,229	7,229	7,229
Mobile & Ohio..... Nov. 1,201	626,124	247,778	1,478,720	2,014,220	97,650	116,046	76,501	183,376	1,400,742
Monongahela..... Nov. 177	314,570	284,211	583,057	11,666,403	3,577,337	1,479,384	1,479,384	1,479,384	1,479,384
San Antonio, Uvalde & Gulf..... Nov. 316	61,169	2,837	10,098	1,454,442	67,915,019	9,373,337	210,955	2,303,909	1,400,742
Continued on next left-hand page	11 mos.	867,233	30,820	9,006,511	3,528,543	1,454,442	2,303,450	24,064,074	1,400,742
Continued on next left-hand page	11 mos.	1,764	7,987,337	365,041	9,006,511	3,528,543	1,454,442	2,303,450	1,400,742



AMERICAN LOCOMOTIVE CO.

FOOD FOR THOUGHT—2

"IT MAY well be asked how many locomotives 15 or even 10 years old are really capable of performing economically the intensive work demanded by the modern schedule. It is not perhaps an exaggeration to say that 50 per cent. of the world's locomotives are more or less unsuited to modern conditions, many comparing more favourably with the Rocket than with modern motive power units! Conversely, probably less than 20 per cent. can really be classed as modern locomotives designed for to-day's requirements.

Competition and present world conditions demand powerful and efficient machines capable not only of exerting tractive effort but of furnishing the requisite boiler horse power to maintain that tractive effort continuously. This is the main characteristic of the modern locomotive. The coupled wheels must also be of larger diameter for the faster freight and passenger work required and this reminds us of the many smaller wheeled engines of earlier days still being repaired which in their attempt to keep up with the times turn 20 per cent. more revolutions than necessary—a further adverse effect on service and the road bed, and an increase in maintenance by an amount far more than that indicated by direct proportion.

Another interesting point is the continual "patching" which goes on of old and worn out locomotives that have long since had their day. A certain amount of improvement to 15 or 20-year-old engines is we think legitimate, but is not this "patching" carried on too far on machines which really should be scrapped?

The locomotive of to-day works in a world of different economics from its ancestry. Cleverly planned schemes of allocation and distribution of engine power insist on a more intensive use of the locomotive—it must be capable of greatly increased mileage per month and practically continuous work between shoppings with the utmost economy. Thus we find the characteristics of much of our motive power of 20 to 30 years ago really unsuitable and some would say wholly obsolescent for such service. Scrapping of old engines should be accelerated and the possibility of the immediate acquisition of new power be re-examined, repair cost and suitability rather than age being the deciding factor."

[Continued next week]

THE RAILWAY GAZETTE (London)
Nov. 28, 1934

30 CHURCH ST., NEW YORK·N.Y.



RAILWAY AGE

Revenues and Expenses of Railways

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1934—CONTINUED

Name of road	Av. mileage operated during period			Operating revenues			Operating expenses			Net from railway operation			Net railway operating income						
	Freight	Pasenger	Total	Way and structures	Maintenance of equipment	Traffic	Transportation	General	Total	Operating ratio	Operating income	Net railway operating income, 1933	\$74,966	\$71,778	\$48,640				
Montour	57	\$148,764	\$7	\$149,355	\$9,614	\$34,643	\$33,617	\$6,347	\$85,088	57.0	\$64,267	\$69,425	\$22,008	\$42,840	\$55,452				
Nashville, Chattanooga & St. Louis	1,203	1,733,657	11 mos.	1,737,747	64,522	12,329	469,787	10,859	1,055,402	69.3	68,086	69,425	12,057	12,057	42,840				
Nevada Northern	11 mos.	837,131	11 mos.	802,039	11,667,763	1,565,788	2,711,282	63,713	432,481	57.987	57,987	57,987	1,201,746	932,905	932,905	1,201,746			
New York Central	11 mos.	11,401	11 mos.	11,401	15,537,658	19,351,159	3,902,339	26,550,097	2,470,169	50,021,692	519,391	8,900,696	9,701,001	18,230,615	7,166,079	7,166,079	18,230,615		
Pittsburgh & Lake Erie	Nov.	233	11 mos.	20	1,074,011	1,268,835	49,455,845	270,452,592	28,036,047	55,732,109	5,572,879	10,499,183	11,13,763	204,727,794	75.7	63,724,798	42,626,186	27,584,970	
New York, Chicago & St. Louis	Nov.	1,691	11 mos.	1,691	3,381,938	54,108	2,515,926	1,062,599	10,623,130	4,501,723	1,012,599	1,012,599	1,201,746	932,905	932,905	1,201,746			
N. Y., New Haven & Hartford	Nov.	2,072	11 mos.	20	3,157,586	44,075	1,154,792	1,268,835	4,262,265	24,443	436,427	63,839	1,050,712	93.9	10,284,057	1,396,536	2,986,072	2,743,108	
New York Connecting	Nov.	2,072	11 mos.	20	3,362,264	509,202	14,111,817	408,330	1,00,626	943,988	478,711	11,877,600	11,877,600	97,677,603	270,974	371,485	371,485	97,677,603	
New York, Ontario & Western	Nov.	568	11 mos.	568	7,151,046	1,771,915	5,589,442	6,760,153	269,810	126,564	125,642	1,838,223	73.1	9,734,513	8,069,545	5,064,960	4,801,075		
Norfolk & Western	Nov.	932	11 mos.	932	4,130,184	8,316	352,567	67,473	48,651	21,19,870	2,938,145	48,406,525	76.2	15,10,715	10,778,055	5,115,599	6,571,184		
Norfolk Southern	Nov.	6,727	11 mos.	6,727	3,700,865	40,601,029	20,529	4,285,032	5,398,844	19,265,405	335,197	4,237,559	75.8	1,351,883	951,003	404,474	1,035,631		
Northern Pacific	Nov.	6,730	11 mos.	6,730	40,529,789	3,025,327	4,160,000	5,169,374	10,052,175	1,60,325	1,776,840	3,19,493	51,727,228	80.8	1,035,631	1,87,968	1,035,631	1,87,968	
Pennsylvania Railroad	Nov.	10,511	11 mos.	10,511	19,651,170	41,28,051	26,536,891	2,101,947	4,817,276	576,825	3,73,940	7,025	233,991	107.8	16,922	32,94	41,232,44	20,844	
Long Island	Nov.	385	11 mos.	385	1,777,798	878,025	3,01,27,362	4,33,609	4,68,4	46,413	5,83,843	1,58,069	16,4,674	2,69,540	72.2	88,124,731	1,37,55	12,764	
Oklahoma City-Ada-Atoka	Nov.	132	11 mos.	132	287,795	3,816	311,274	54,153	21,550	7,323	26,591	2,73,901	3,37,156	75.4	1,093,828	794,342	480,005	229,165	
Pennsylvania-Reading Seashore Lines	Nov.	411	11 mos.	411	2,548,723	2,528,976	5,367,197	465,862	822,488	103,376	3,85,725	3,34,578	80.6	2,66,053	36,226	88,626	88,626	36,226	
Pere Marquette	Nov.	2,224	11 mos.	2,224	1,726,585	41,231	1,877,153	2,62,174	432,513	631,285	8,56,677	8,56,677	97,744	6,308,244	3,849,793	4,977,150	3,849,793	4,977,150	
Pittsburgh & Shawmut	Nov.	101	11 mos.	101	54,927	4,734	592,191	105,950	191,266	14,739	14,739	14,739	14,739	71.7	1,04,042	1,37,55	4,330	4,330	
Pittsburgh & West Virginia	Nov.	138	11 mos.	138	193,261	2,40,224	2,515,772	2,64,300	245,510	164,300	163,046	1,845,022	73.3	6,308,244	3,849,793	4,977,150	3,849,793	4,977,150	
Richmond, Frederickburg & Potomac	Nov.	117	11 mos.	117	2,968,273	1,381,397	5,51,482	2,63,925	4,91,746	1,197	32,250	7,994	15,189	12,893	5,438	11,73,322	12,480,132	11,73,322	12,480,132
Rutland	Nov.	102	11 mos.	102	578,809	4,795	204,086	2,60,745	3,60,809	8,736,343	1,04,099	91,099	51,606	51,606	5,281	49,806	100,433	113,854	113,854
St. Louis-San Francisco	Nov.	1,461	11 mos.	1,461	3,705,167	2,33,664	4,172,671	307,199	675,631	13,595	14,72,724	14,73,971	14,73,971	14,73,971	71.4	1,04,042	1,37,55	4,330	4,330
St. Louis Southwestern Lines	Nov.	1,461	11 mos.	1,461	43,618,377	2,688,855	48,707,454	3,60,745	1,04,099	787,481	18,078,265	2,382,121	3,37,55,218	73.3	36,060	39,530	782,955	856,409	856,409
Ft. Worth & Rio Grande	Nov.	233	11 mos.	233	3,746,446	1,382,273	5,51,482	2,63,925	4,91,746	113,442	115,011	1,430,905	9,367	9,367	1,04,042	1,37,55	4,330	4,330	4,330
St. Louis-San Francisco & Texas	Nov.	261	11 mos.	261	834,053	651	3,033,310	596,581	798,775	1,04,773	1,17,52,853	215,890	2,883,985	95.1	149,325	2,398,444	2,98,444	2,98,444	
St. Louis Southwestern Lines	Nov.	1,810	11 mos.	1,810	12,353,210	191,814	13,163,733	1,37,00,820	1,862,316	76,840	27,52,512	1,62,771	1,62,771	121,7	6,12,202	302,332	321,847	321,847	
San Diego & Arizona Eastern	Nov.	155	11 mos.	155	349,703	47,308	41,215	108,078	96,812	1,04,682	1,22,215	1,22,215	1,22,215	117,3	-15,682	-16,177	-21,160	-21,160	
Seaboard Air Line	Nov.	4,308	11 mos.	4,308	2,24,462	2,758,235	49,177	5,758,67	5,96,812	132,880	1,00,662	1,00,662	1,00,662	69.0	4,083,108	3,300,849	311,791	311,791	

Continued on next left-hand page



866

1881

NEW YORK

Union Switch & Signal Co.

MONTREAL

SWISSVALE, PA.

CHICAGO

ST. LOUIS

1935

SAN FRANCISCO

Revenues and Expenses of Railways

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1934—CONTINUED

Name of road	Av. mileage operated during period	Operating revenues		Operating expenses			Operating ratio	Net from railway operation	Net railway operating income	Net railway operating income, 1933	
		Freight	Passenger (inc. misc.)	Maintenance of Way and structures	Equipment	Traffic					
Southern Ry.	6,644	\$5,273,884	\$55,171	\$6,509,165	\$851,410	\$1,230,455	\$140,300	\$2,409,764	\$374,010	\$5,044,631	
11 mos.	6,644	\$7,055,771	7,149,164	7,149,625	9,466,902	13,401,122	15,371,884	26,044,440	54,160,830	77,5	\$1,464,534
Alabama Great Southern	315	3,663,499	3,31,989	4,507,375	11,206	101,608	11,206	11,363	21,358	56,029	\$10,634,755
Cinn., New Orleans & Texas Pacific, Nov. 11 mos.	336	9,944,001	721,047	11,334,859	1,492,019	2,073,828	265,318	2,59,392	54,948	707,556	76,9
Georgia Southern & Florida, Nov. 11 mos.	397	1,211,689	1,98,374	1,37,506	32,102	33,277	49,206	51,581	63,220	456,742	7,27,249
New Orleans & Northeastern, Nov. 11 mos.	204	1,669,977	198,556	2,027,305	287,859	37,063	60,958	207,774	100,57	1,549,469	64,2
Northern Alabama	99	460,647	378,881	18,422	1,689	14,058	16,153	16,614	2,32	6,342	10,14
Southern Pacific	8,795	6,598,512	1,259,681	8,750,166	816,111	1,376,091	295,450	3,418,899	258,311	6,340,524	72,5
So. Pac. Steamship Lines, Nov. 11 mos.	8,835	79,637,671	14,400,610	14,142,655	10,14,657	17,517,397	3,014,324	36,557,985	6,144,555	75,25,710	72,3
Texas & New Orleans	4,453	2,218,407	295,049	2,767,691	349,365	556,820	1,22,38	10,109,131	2,287,919	24,70,303	84,6
Spokane, Portland & Seattle, Nov. 11 mos.	4,464	23,366,479	2,276,501	29,208,223	4,480,617	6,481,835	34,217	5,563	138,103	410,192	410,192
Tennessee Central	287	1,765,543	57,431	1,900,880	1,900,880	5,298,563	58,000	344,121	61,669	57,5285	121,4
Tennessee Central, Nov. 11 mos.	239	1,531,349	150,696	31,232	381,650	342,17	57,500	673,000	1,30,405	1,353,189	57,1
Texas Mexican	1,949	16,415,199	4,472,697	430,795	4,095,698	461,799	3,88,411	2,117,524	1,084,884	3,027,866	1,39,586
Toledo, Peoria & Western, Nov. 11 mos.	239	1,571,718	98,062	954	97,193	11,873	3,012	26,823	56,658	59,467	1,07,373
Union Pacific	3,767	51,906,293	4,730,738	62,165,511	5,483,397	13,546,856	1,224,772	114,632	1,779,725	3,49,493	3,912,958
Oregon Short Line, Nov. 11 mos.	2,504	1,616,533	78,893	1,818,339	118,353	281,804	28,502	216,979	629,906	1,01,009	69,2
St. Joseph & Grand Island, Nov. 11 mos.	2,504	17,143,359	1,094,015	19,673,601	2,179,380	3,086,524	3,088,901	6,211,745	1,084,891	13,216,082	67,3
Oregon-Wash. R. R. & Nav. Co., Nov. 11 mos.	2,293	961,711	87,902	5,511,614	5,307,942	1,166,778	147,517	157,880	472,011	103,508	930,964
Los Angeles & Salt Lake, Nov. 11 mos.	2,294	11,505,312	1,133,506	14,104,790	2,410,557	1,917,81	54,051	5,063,313	1,007,478	10,98,982	79,8
Utah	2,447	12,260,491	1,409,768	14,871,364	1,562,048	2,126,146	474,927	49,325	3,94,334	67,214	9,442,597
St. Joseph & Grand Island, Nov. 11 mos.	238	210,449	1,698	219,976	102,461	23,270	2,141	72,14	142,656	216,850	96,6
Western Maryland, Nov. 11 mos.	883	2,559,333	21,412	2,656,063	408,988	28,656	24,018	790,988	134,756	1,651,161	62,2
Utah	2,445	30,922,266	1,887,767	3,135,976	10,265	87,285	473	18,880	50,191	48,334	55,4
Virginia	619	1,237,099	3,277	1,288,919	1,082,595	2,255,273	180,808	1,09,704	35,610	61,49,378	46,9
Western Maryland, Nov. 11 mos.	883	1,121,019	5,069	1,157,239	1,14,372	1,44,32	1,33,065	1,183,943	185,088	2,24,378	47,7
Wabash	511	16,443	10,306,206	93,531	12,740,440	1,749,318	2,785,072	382,899	3,03,313	41,302,729	1,66,343
Ann Arbor	293	2,912,680	1,927	3,272,401	27,205	46,841	10,919	1,17,130	1,294,363	214,363	78,7
Western Maryland	883	2,911,613	32,038	3,05,506	271,408	2,15,122	3,37,348	3,03,313	41,302,729	1,79,767	68,9
Western Pacific	1,213	10,411,462	18,027	99,407	151,459	1,75,733	51,446	3,76,315	82,806	87,345	87,345
Wheeling & Lake Erie	511	17,213	10,411,462	26,655,30	11,345,123	1,78,997	1,75,145	59,084	3,97,158	9,03,373	12,307,53
Wichita Falls & Southern, Nov. 11 mos.	203	32,527	338	35,526	9,364	5,606	1,579	13,841	33,807	95,16	1,244
203	420,729	825	474,937	98,236	71,180	19,231	141,464	38,979	365,090	77,71	105,847